Appendix H
Noise Analysis

Date	Description	Pages
July, 2004	Noise Analysis	167

11400 SOUTH EIS
Traffic Noise Analysis Report

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1.0 OVERVIEW

A noise analysis was completed for the 11400 South Study Area bordered by Bangerter Highway on the west, State Street on the east, 10400 South on the north, and 12600 South on the south. This report was prepared to examine traffic noise along affected routes resulting from existing conditions, the proposed four alternatives, and the no build alternative for the 11400 South project. The alternatives are shown in Appendix A.

Existing noise levels were characterized and future 2030 noise levels were modeled to determine possible traffic noise impacts associated with the different alternatives. In addition, potential noise abatement strategies were considered for mitigating roadway noise impacts. This process was completed according to State (Utah Department of Transportation (UDOT) 08A2-1 contained in Appendix B) and Federal (Federal Regulation 23 CFR 772) noise policies and regulations. Noise impacts were calculated using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) Version 2.5 computer program for receiver locations along the affected routes of each alternative.

The proposed alternatives include construction of a transportation facility on a new location, increasing the number of through traffic lanes, and substantially altering the horizontal or vertical alignment of an existing transportation facility. Therefore, this project is considered a Type I Project.

2.0 TRAFFIC NOISE METHODOLOGY

All sound level measurements and estimates in this document are reported as Leq(h) in units of decibel (dB) and are A-weighted. The Leq describes the receiver's average noise exposure from all events over a given period of time. Leq(h) is the hourly value of Leq. The "A" indicates that the sound has been filtered to reduce the strength of very low and very high frequency sounds, much as the human ear would hear. On the average, each A-weighted sound level increase of 10 dB corresponds to an approximate doubling of subjective loudness. Table 1 summarizes the audible differences perceived by most people associated with changes in decibel levels (UDOT, 2004).

Table 1. Decibel Increase vs. Audible Difference

Decibel Increase	Audible Difference
1 dBA	No perceptible change
3 dBA	Barely perceptible change
5 dBA	Readily perceptible change
10 dBA	Perceived as twice as loud

Source: UDOT, 2004

2.1 Noise Abatement Guidelines

UDOT considers noise impacts based on FHWA Noise Abatement Criteria (NAC) (23CFR772). FHWA requires all states to define at what value a predicted noise level approaches the NAC defined in 23 CFR 772, and, thus, results in a noise impact (FHWA, 1995). UDOT has defined "approach" as 2dBA less than the FHWA NAC for use in identifying traffic noise impacts in traffic noise analyses. The UDOT NAC are shown in Table 2.

Two types of noise levels occurring at sensitive land use areas are considered impacts under the UDOT criteria (UDOT, 2004):

(1) The design level is greater than or equal to the UDOT NAC shown in Table 2 for the respective activity category.

(2) The design level is greater than or equal to an increase of 10 dBA over the existing noise level, regardless of the existing noise value.

Therefore, if a project predicts a noise level equal to the values shown in the following table, or a noise level greater than 10 dBA over existing levels, some sort of abatement must be considered for the project in the appropriate locations. Some locations, however, may not be feasible or reasonable for abatement.

UDOT considers a severe traffic noise impact to be an increase of 30 dBA or more over existing residential noise levels, or a predicted absolute noise level of 80 dBA or more (UDOT 2004).

Table 2. UDOT Noise Abatement Criteria

Activity Category	Leq(h), dBA*	Description of Activity Category
A	55 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	65 (exterior)	Picnic areas, recreational areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	70 (exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	None	Undeveloped lands.
E	50 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: UDOT, 2004
*Hourly A-weighted sound level, reflecting a 2dBA approach value below 23CFR772

The majority of the project area includes residential and commercial land uses. Other category B land uses found within the study area include parks, schools, recreation areas, churches, hotels, and motels. No hospitals or libraries (excluding school libraries) are located within the project area.

2.2 Existing Noise Assessment

Existing ambient noise levels along the affected routes were determined by direct measurements at various locations in residential or commercial areas. Short-term measurements (15 minutes) were taken at the selected sites near a building (or a proposed building development) to represent areas of frequent human activity. Train whistles and overhead air traffic were quite prevalent on the eastern edge of the study area.

A total of fourteen measurements were taken along the affected routes. The measurements were recorded on mild, calm weekdays using a Quest Technologies 2900 integrating and logging sound level meter. The meter was calibrated using a Quest Technologies QC-10 sound calibrator prior to measurements. Relevant data, such as traffic volumes, vehicle types, and traffic speeds were collected for verification of FHWA's Traffic Noise Model (TNM).

A comparative analysis of sound level meter readings and modeled receptor noise levels for the existing conditions are shown in Table 3. The difference between the existing readings and verified model noise levels is within 3dBA and considered acceptable.

Table 3. Meter Readings and Modeled Noise Levels

Address	Existing Leq(h), dBA*	Verified Existing Leq(h), dBA	Difference, dBA
580 West 11400 South	67.7	65.0	2.7
11700 South Lone Peak Parkway	56.5	58.2	1.7
3000 West 11400 South	62.4	61.2	1.2
2103 West 11400 South	64.8	63.8	1.0
1570 West 11400 South	64.1	65.3	1.2
11400 South River Front Parkway	54.4	52.3	2.1
10431 S Gladys Drive (1925 West)	56.1	55.8	0.3
2450 West 10400 South	63.4	63.2	0.2
¼ mile east of Bangerter Highway on 10400 South	61.2	61.1	0.1
2840 West 10386 South	58.6	59.8	1.2
2565 West 12640 South	55.1	54.6	0.5
Jordan River Parkway at 12300 South	51.0	52.9	1.9
1132 West Chapel Ridge Drive	54.9	N/A	N/A
Jordan River Parkway Trail at 11400 South	50.8	47.8	3.0

N/A Not applicable because no existing traffic for measurement locations is available.

Once the model configuration was verified using actual noise measurements and calculated TNM modeled values, the model was run for existing traffic conditions along all routes affected by the different alternatives. Receivers were placed every 2 to 3 homes/buildings where possible. For largely spaced individual homes or large commercial operations, receivers were placed for each. No receivers were placed on 11000 South or 11800 South, as no residential dwellings are located along those routes. The modeled routes and associated receivers are shown in Appendix C. The

baseline conditions include all projects already in the Wasatch Front Regional Council long range plan (shown in Appendix A under No Action Alternative) covered under separate environmental documents.

Excluding the eastern portion of the study area, the topography of the study area is fairly consistent. Areas of changing grade are located around the Jordan River on 10600 S, 11400 S, and 12300 S; the terrain dips down in these areas from approximately 700 West to 1300 West ranging from an elevation of 4400 ft at 700 West and 4500 ft near 1300 West to approximately 4325 ft near the Jordan River. The terrain also dips down between 700 West and Jordan Gateway on 11400 South.

The natural topography, receptor locations, roadway alignments, roadway cut and fill walls and slopes greater than five feet, existing barriers, and building structures were included in the model setup and verification. Existing walls and berms are shown in Appendix C. Existing and future medium truck, heavy truck, and bus volumes were estimated at one percent of total traffic volumes for each type of truck and two percent for buses based on a 1999 Study conducted on 10400 South. Truck volumes and bus volumes for I-15 were each estimated at one percent of total traffic volumes.

3.0 NOISE IMPACTS

Future 2030 noise model runs for Alternatives 1, 3A, 4 and 7, and the No Build Alternative were based on the existing model set up. For Alternatives 1, 3A, 4 and 7, the existing model was modified based on roadway improvements and future traffic data for the worst hourly traffic noise conditions. The determination of the worst hourly traffic noise conditions is contained in Appendix D. Traffic volumes were different for each alternative requiring model runs for each scenario. The No Build Alternative model run used the existing roadway configuration and 2030 traffic data for the worst hourly traffic noise conditions. Receivers were primarily placed near buildings or outside residential areas such as backyards and patios where residents may be exposed to traffic noise. Receiver locations are shown in Appendix C. Table 4 contains traffic noise levels as modeled by TNM for existing conditions and future conditions for each alternative.

3.1 No Build Alternative

10400/10600 South
Under the no build alternative, sixty-six dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and sixty-five dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

11400 South
Under the no build alternative, one hundred fifty-six dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and nineteen dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

12300/12600 South
Under the no build alternative, seventy-three dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and fifty-eight dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

Table 4. Predicted Existing and Future Noise Levels

Corridor	Receiver Name	#DU's	State Criterion (dBA)	Noise Levels - Leq (dBA)						Maximum Increase (dBA)	Impact by ≥ NAC or Substantially Exceeding Existing Noise Levels		Noise Abatement	
				Existing	No Build	Alt 1	Alt 3A	Alt 4	Alt 7		No Build	Alts	With Abatement (dBA)	Noise Reduction (dBA)
11400 S.	R1	1	65	64.7	65.5	59.6	62.0	59.7	56.0	0.8	E	NI	-	-
11400 S.	R3	1	65	66.7	69.1	68.3	67.5	72.8	68.5	6.1	E	E	-	-
11400 S.	R5	1	65	57.3	59.5	64.0	56.2	62.0	64.4	7.1	NI	NI	-	-
11400 S.	R7	1	65	54.9	56.9	61.2	54.7	59.8	61.4	6.5	NI	NI	-	-
11400 S.	R8	1	65	50.7	52.6	56.2	51.7	56.3	54.4	5.6	NI	NI	-	-
11400 S.	R9	1	65	52.1	53.8	56.5	52.5	56.6	55.2	4.5	NI	NI	-	-
11400 S.	R10	1	65	52.1	53.8	57.4	52.5	57.7	55.8	5.6	NI	NI	-	-
11400 S.	R11	2	65	64.1	64.6	63.4	62.2	64.0	62.3	0.5	NI	NI	-	-
11400 S.	R13	2	65	n/a	47.6	57.0	n/a	57.6	56.9	n/a	NI	S	54.0/54.5/53.9	3.0/3.1/3.0
11400 S.	R14	1	65	n/a	47.3	55.0	n/a	55.5	55.0	n/a	NI	S	53.8/54.3/53.9	1.2/1.2/1.1
11400 S.	R15	1	65	n/a	47.1	53.5	n/a	54.1	53.5	n/a	NI	S	52.8/53.4/52.8	0.7/0.7/0.7
11400 S.	R17	1	65	47.9	50.0	63.2	50.0	63.6	63.3	15.7	NI	NI	-	-
11400 S.	R19	4	65	46.8	48.9	65.4	49.1	66.1	66.6	22.2	NI	NI/E/S	58.2/58.9/54.3	7.2/7.2/12.3
11400 S.	R21	5	65	n/a	n/a	60.1	n/a	60.2	60.7	n/a	NI	NI/S	55.3/56.5/54.0	4.8/3.7/6.7
11400 S.	R23	4	65	n/a	n/a	60.9	n/a	59.5	59.0	n/a	NI	NI/S	55.9/55.4/55.1	5.0/4.1/3.9
11400 S.	R25	3	65	n/a	n/a	60.9	n/a	59.8	59.9	n/a	NI	NI/S	55.3/54.754.5	5.6/5.1/5.4
11400 S.	R27	3	65	n/a	n/a	67.6	n/a	66.7	66.8	n/a	NI	NI/E/S	58.0/56.9/56.8	9.6/9.8/10.0
11400 S.	R29	1	65	n/a	n/a	57.6	n/a	58.4	58.1	n/a	NI	NI/S	52.4/53.3/52.9	5.2/5.1/5.2
11400 S.	R31	1	65	54.4	56.7	62.5	56.8	62.7	62.4	9.4	NI	NI	58.8/59.1/58.8	3.7/3.6/3.6
11400 S.	R33	1	65	65.5	68.8	73.3	69.0	73.7	73.5	8.2	E	E	-	-
11400 S.	R35	3	65	56.4	60.5	67.4	61.1	68.0	67.8	11.6	NI	NI/E/S	-	-
11400 S.	R37	1	65	56.9	61.1	67.5	61.7	67.6	67.5	10.7	NI	NI/E/S	-	-
11400 S.	R39	2	65	56.9	63.9	68.4	64.4	67.7	67.6	11.5	NI	NI/E/S	-	-

Table 4. Predicted Existing and Future Noise Levels (Cont.)

Corridor	Receiver Name	#DU's	State Criterion (dBA)	Noise Levels - Leq (dBA)						Maximum Increase (dBA)	Impact by ≥ NAC or Substantially Exceeding Existing Noise Levels		Noise Abatement	
				Existing	No Build	Alt 1	Alt 3A	Alt 4	Alt 7		No Build	Alts	With Abatement (dBA)	Noise Reduction (dBA)
11400 S.	R41	1	65	56.7	62.7	68.2	63.4	67.5	67.4	11.5	NI	E/S	-	-
11400 S.	R43	1	65	67.1	69.8	70.7	69.5	70.2	70.2	3.6	E	E	-	-
11400 S.	R45	1	70	63.5	65.7	68.4	65.1	68.7	68.7	5.2	NI(c)	NI(c)	-	-
11400 S.	R47	1	65	69.1	71.2	70.2	70.2	70.7	70.8	2.1	E	E	-	-
11400 S.	R49	1	70	58.7	60.6	62.0	60.2	62.2	62.3	3.6	NI	NI	-	-
11400 S.	R51	1	65	65.7	67.8	66.0	67.0	66.7	66.9	2.1	E	E	-	-
11400 S.	R53	1	65	59.1	63.1	65.3	62.8	65.0	65.3	6.2	NI	NI/E	-	-
11400 S.	R55	2	65	56.4	60.0	61.5	59.8	61.3	61.6	5.2	NI	NI	-	-
11400 S.	R57	4	65	63.5	67.5	66.6	66.9	66.4	66.7	4.0	E	E	-	-
11400 S.	R59	3	65	59.2	62.7	63.8	62.5	63.6	63.8	4.6	NI	NI	-	-
11400 S.	R61	2	65	57.0	60.0	60.6	60.1	60.6	60.9	3.9	NI	NI	-	-
11400 S.	R63	2	65	57.5	60.5	62.6	60.7	63.5	64.0	6.5	NI	NI	-	-
11400 S.	R65	1	65	57.1	60.0	66.3	61.7	69.2	69.3	12.2	NI	NI/E/S	-	-
11400 S.	R67	1	65	51.9	54.6	59.2	56.0	59.7	59.8	7.9	NI	NI	-	-
11400 S.	R69	3	65	59.9	63.0	64.9	64.6	65.7	65.8	5.9	NI	NI/E	-	-
11400 S.	R71	2	65	55.0	58.5	63.0	60.1	63.9	64.0	9.0	NI	NI	-	-
11400 S.	R73	2	65	54.9	58.7	65.1	60.4	65.1	65.2	10.3	NI	NI/E/S	-	-
11400 S.	R75	3	65	53.2	57.2	64.9	58.9	64.6	64.8	11.6	NI	S	-	-
11400 S.	R77	1	65	56.9	60.8	65.8	62.5	65.6	65.7	8.8	NI	NI/E	-	-
11400 S.	R79	1	65	53.6	56.6	61.9	58.1	61.4	61.5	7.9	NI	NI	-	-
11400 S.	R81	1	65	55.5	57.9	63.4	58.8	65.0	65.2	9.7	NI	NI/E	-	-
11400 S.	R83	1	65	58.4	60.7	63.9	60.0	65.5	65.7	7.3	NI	NI/E	-	-
11400 S.	R85	1	65	61.2	62.6	63.5	60.6	66.4	66.8	5.6	NI	NI/E	-	-

Table 4. Predicted Existing and Future Noise Levels (Cont.)

Corridor	Receiver Name	#DU's	State Criterion (dBA)	Noise Levels - Leq (dBA)						Maximum Increase (dBA)	Impact by ≥ NAC or Substantially Exceeding Existing Noise Levels		Noise Abatement	
				Existing	No Build	Alt 1	Alt 3A	Alt 4	Alt 7		No Build	Alts	With Abatement (dBA)	Noise Reduction (dBA)
11400 S.	R87	1	65	59.5	61.2	65.4	61.6	68.1	68.4	8.9	NI	NI/E	-	-
11400 S.	R89	1	65	55.4	57.2	62.1	57.6	63.0	63.3	7.9	NI	NI	-	-
11400 S.	R91	1	65	58.0	60.3	63.0	61.6	65.0	65.3	7.3	NI	NI	-	-
11400 S.	R93	3	65	52.9	55.5	57.1	56.8	57.4	57.6	4.7	NI	NI	-	-
11400 S.	R95	4	65	53.1	55.1	57.7	56.3	57.3	57.6	4.5	NI	NI	-	-
11400 S.	R97	3	65	55.1	56.9	59.4	58.1	58.7	58.9	3.8	NI	NI	-	-
11400 S.	R99	3	65	59.7	61.3	64.4	62.4	64.2	64.5	4.8	NI	NI	-	-
11400 S.	R101	3	65	61.6	63.2	65.0	64.3	65.9	66.1	4.5	NI	NI/E	-	-
11400 S.	R103	3	65	61.6	63.2	64.9	64.2	66.4	66.6	5.0	NI	NI/E	-	-
11400 S.	R105	3	65	64.6	66.0	67.0	67.0	68.6	68.8	4.2	E	NI/E	-	-
11400 S.	R107	2	65	57.7	59.3	62.8	60.3	64.2	64.4	6.7	NI	NI	-	-
11400 S.	R109	4	65	64.0	65.1	66.3	66.3	68.1	68.3	4.3	E	NI/E	-	-
11400 S.	R114	2	65	62.0	64.1	67.7	65.1	68.2	68.9	6.9	NI	E	-	-
11400 S.	R116	1	65	65.7	68.2	68.8	69.4	68.1	68.7	3.7	E	E	-	-
11400 S.	R118	2	65	59.7	62.2	64.5	63.2	64.0	64.5	4.8	NI	NI	-	-
11400 S.	R120	2	65	61.8	64.3	65.9	65.5	65.0	65.5	4.1	NI	E	-	-
11400 S.	R122	1	65	60.8	63.3	65.7	64.5	64.8	65.3	4.9	NI	NI/E	-	-
11400 S.	R124	1	65	53.6	56.0	59.3	57.1	58.6	59.1	5.7	NI	NI	-	-
11400 S.	R126	4	65	55.7	57.5	63.4	60.6	63.7	64.2	8.5	NI	NI	-	-
11400 S.	R128	1	65	55.3	57.2	64.2	60.2	63.3	63.8	8.9	NI	NI	-	-
11400 S.	R130	3	65	56.3	58.0	64.3	61.3	64.4	64.9	8.6	NI	NI	-	-
11400 S.	R132	1	65	58.6	60.0	59.0	62.4	65.2	65.6	7.0	NI	NI/E	-	-
11400 S.	R134	1	65	59.8	61.1	58.0	63.7	65.4	65.8	6.0	NI	NI/E	-	-

Table 4. Predicted Existing and Future Noise Levels (Cont.)

Corridor	Receiver Name	#DU's	State Criterion (dBA)	Noise Levels - Leq (dBA)						Maximum Increase (dBA)	Impact by ≥ NAC or Substantially Exceeding Existing Noise Levels		Noise Abatement	
				Existing	No Build	Alt 1	Alt 3A	Alt 4	Alt 7		No Build	Alts	With Abatement (dBA)	Noise Reduction (dBA)
11400 S.	R136	1	65	57.6	59.3	61.2	60.7	64.0	64.4	6.8	NI	NI	-	-
11400 S.	R138	1	70	60.9	62.5	65.0	64.4	67.2	67.4	6.5	NI	NI/E	-	-
11400 S.	R140	1	70	67.7	70.0	69.6	69.0	69.7	69.8	2.3	E	NI(c)	-	-
11400 S.	R142	1	70	63.6	65.5	70.2	68.5	70.2	70.4	6.8	NI(c)	NI.E	-	-
11400 S.	R144	4	65	57.8	59.6	66.5	62.9	68.6	68.8	11.0	NI	NI/E/S	-	-
11400 S.	R146	2	65	52.0	56.3	66.6	59.1	66.4	66.4	14.6	NI	NI/E/S	-	-
11400 S.	R148	1	65	55.6	60	61.0	63.1	70.6	70.5	15.0	NI	NI/E/S	-	-
11400 S.	R150	1	65	59.5	63.2	66.1	65.0	70.0	69.8	10.5	NI	NI/E/S	-	-
11400 S.	R152	1	65	57.7	59.4	63.2	59.2	63.7	63.6	7.6	NI	NI/E	60.7/61.4/61.4	2.5/2.3/2.2
11400 S.	R154	1	65	n/a	n/a	57.4	n/a	57.6	57.6	n/a	NI	NI/S	53.5/53.8/53.7	3.9/3.8/3.9
11400 S.	R156	3	65	n/a	n/a	67.7	n/a	66.4	67.1	n/a	NI	NI/S	61.2/57.3/57.3	6.5/9.1/9.8
11400 S.	R158	4	65	n/a	n/a	66.9	n/a	65.9	66.6	n/a	NI	NI/S	58.1/56.5/56.6	8.7/9.4/10.0
11400 S.	R160	3	65	n/a	n/a	59.6	n/a	59.9	60.6	n/a	NI	NI/S	56.6/54.8/55.5	3.0/5.1/5.1
11400 S.	R162	5	65	n/a	n/a	60.6	n/a	60.0	61.5	n/a	NI	NI/S	54.8/55.7/53.4	5.8/4.3/8.1
11400 S.	R164	4	65	46.9	48.9	64.5	49.2	64.8	65.6	19.0	NI	NI/E/S	57.8/57.6/54.7	7.2/7.2/10.9
11400 S.	R166	1	65	52.1	54.5	66.4	54.2	66.8	66.5	14.7	NI	NI/E/S	-	-
11400 S.	R168	1	65	43.7	46.0	56.6	46.1	57.1	56.7	13.4	NI	NI/S	-	-
11400 S.	R170	1	65	59.8	60.7	66.2	58.2	65.3	64.9	6.4	NI	NI/E	-	-
11400 S.	R172	1	70	65.6	67.8	68.8	69.2	73.8	73.7	8.2	NI(c)	NI/E	-	-
10400 S.	R174	1	65	63.2	65.6	67.7	69.5	68.2	68.2	6.3	E	E	64.6/66.4	3.1/3.1
10400 S.	R176	1	65	64.5	68.3	69.5	71.3	70.3	70.3	6.8	E	E	-	-
10400 S.	R178	2	65	61.2	65.0	60.6	62.6	67.0	67.0	5.8	NI	NI/E	-	-
10400 S.	R180	4	65	52.2	55.3	54.5	55.3	56.8	56.8	4.6	NI	NI	-	-

Table 4. Predicted Existing and Future Noise Levels (Cont.)

Corridor	Receiver Name	#DU's	State Criterion (dBA)	Noise Levels - Leq (dBA)						Maximum Increase (dBA)	Impact by ≥ NAC or Substantially Exceeding Existing Noise Levels		Noise Abatement	
				Existing	No Build	Alt 1	Alt 3A	Alt 4	Alt 7		No Build	Alts	With Abatement (dBA)	Noise Reduction (dBA)
10400 S.	R182	3	65	53.1	56.2	55.5	56.2	57.6	57.6	4.5	NI	NI	-	-
10400 S.	R184	3	65	54.0	56.9	57.8	58.9	58.6	58.6	4.9	NI	NI	-	-
10400 S.	R186	1	65	59.0	61.6	63.2	64.4	63.4	63.4	5.4	NI	NI	-	-
10400 S.	R188	1	65	61.5	64.0	66.4	67.7	65.8	65.8	6.2	NI	E	-	-
10400 S.	R193	1	70	66.9	70.0	71.3	71.4	70.1	70.1	4.5	E	E	-	-
10400 S.	R195	2	65	65.4	67.6	70.0	70.1	68.4	68.4	4.7	E	E	-	-
10400 S.	R197	2	65	65.2	66.1	66.6	67.7	68.0	68.0	2.8	E	E	-	-
10400 S.	R199	3	65	64.8	66.0	66.6	67.8	67.6	67.6	3.0	E	E	-	-
10400 S.	R201	2	65	59.0	60.7	62.4	63.5	62.0	62.0	4.5	NI	NI	-	-
10400 S.	R203	1	65	60.9	62.8	65.3	65.1	64.0	64.0	4.4	NI	NI/E	-	-
10400 S.	R205	3	65	60.3	62.4	65.3	64.8	63.5	63.5	5.0	NI	NI/E	-	-
10400 S.	R207	2	65	65.5	67.8	68.9	69.5	68.8	68.8	4.0	E	E	-	-
10400 S.	R209	1	65	63.1	66.0	68.8	68.8	67.4	67.5	5.7	E	E	-	-
10400 S.	R211	2	65	65.1	68.0	69.8	69.7	68.4	68.5	4.7	E	E	-	-
10400 S.	R213	3	65	62.7	64.0	66.9	66.4	66.5	66.6	4.2	NI	E	-	-
10400 S.	R215	1	65	59.5	60.6	65.0	64.3	64.2	64.1	5.5	NI	NI/E	60.8	4.2
10400 S.	R217	1	70	61.7	62.0	66.0	66.2	65.0	65.5	4.5	NI(c)	NI(c)	-	-
10400 S.	R219	1	70	60.8	60.5	65.6	65.8	65.3	65.5	5.0	NI(c)	NI(c)	-	-
10400 S.	R221	1	65	68.7	71.3	71.6	71.5	70.7	70.5	2.9	E	E	-	-
10400 S.	R223	3	65	66.1	68.1	68.2	67.6	67.1	66.9	2.1	E	E	-	-
10400 S.	R225	2	65	67.8	70.4	71.6	71.7	71.1	71.1	3.9	E	E	-	-
10400 S.	R227	4	65	67.1	69.2	72.2	70.1	70.0	70.0	5.1	E	E	-	-
10400 S.	R229	3	65	65.2	66.5	67.1	66.2	65.9	65.9	1.9	E	E	-	-

Table 4. Predicted Existing and Future Noise Levels (Cont.)

Corridor	Receiver Name	#DU's	State Criterion (dBA)	Noise Levels - Leq (dBA)						Maximum Increase (dBA)	Impact by ≥ NAC or Substantially Exceeding Existing Noise Levels		Noise Abatement	
				Existing	No Build	Alt 1	Alt 3A	Alt 4	Alt 7		No Build	Alts	With Abatement (dBA)	Noise Reduction (dBA)
10400 S.	R231	1	65	64.8	66.7	68.5	67.9	67.6	67.6	3.7	E	E	-	-
10400 S.	R233	1	65	64.6	66.0	68.2	67.7	67.0	67.0	3.6	E	E	-	-
10400 S.	R235	3	65	66.2	67.4	69.2	68.8	68.5	68.5	3.0	E	E	59.8/59.8	9.4/9.0
10400 S.	R237	3	65	66.4	67.7	66.9	67.2	68.8	68.8	3.1	E	E	60.3/60.3	6.6/6.9
10400 S.	R239	1	65	66.0	68.7	70.5	70.4	69.0	69.0	4.5	E	E	-	-
10400 S.	R241	1	65	68.6	70.9	72.4	74.1	73.1	73.1	5.5	E	E	67.3/68.9	5.1/5.2
10400 S.	R243	3	65	62.1	64.7	67.4	69.2	66.8	66.8	7.1	NI	E	-	-
10400 S.	R245	1	65	59.6	63.4	63.0	63.9	64.2	64.2	4.6	NI	NI	-	-
10400 S.	R247	4	65	59.7	63.8	64.3	64.8	64.3	64.3	5.1	NI	NI	-	-
10400 S.	R249	4	65	59.6	63.3	63.9	64.4	64.4	64.4	4.8	NI	NI	-	-
10400 S.	R251	1	65	59.9	63.9	64.0	65.4	65.6	65.6	5.7	NI	NI/E	-	-
10400 S.	R253	5	65	61.8	65.8	66.1	67.6	67.5	67.5	5.8	E	E	-	-
10400 S.	R258	1	70	65.6	67.1	70.4	70.9	69.4	69.4	5.3	NI(c)	NI/E	-	-
10400 S.	R260	1	70	65.2	66.2	65.8	66.7	64.3	59.2	1.5	NI(c)	NI(c)	-	-
10400 S.	R262	1	70	61.6	62.5	66.0	66.6	66.7	66.3	5.1	NI(c)	NI(c)	-	-
10400 S.	R264	1	70	64.7	66.0	68.2	68.8	67.4	67.1	4.1	NI(c)	NI(c)	-	-
10400 S.	R266	1	70	66.0	67.0	67.6	67.3	66.8	66.0	1.6	NI(c)	NI(c)	-	-
10400 S.	R268	1	65	66.6	67.5	67.6	67.3	67.3	66.6	1.0	NI(c)	NI(c)	-	-
10400 S.	R270	4	70	67.6	68.5	68.1	67.3	67.6	66.8	0.5	NI(c)	NI(c)	-	-
10400 S.	R272	1	70	69.5	70.3	66.0	64.8	70.3	69.3	0.8	NI(c)	NI/E	-	-
10400 S.	R274	2	65	65.5	65.8	61.6	60.9	66.7	65.8	1.2	NI	NI/E	-	-
10400 S.	R276	1	70	66.5	67.0	68.1	68.7	68.4	68.0	2.2	NI(c)	NI(c)	-	-
10400 S.	R278	1	70	66.5	67.1	68.6	69.1	68.3	67.9	2.6	NI(c)	NI(c)	-	-

Table 4. Predicted Existing and Future Noise Levels (Cont.)

Corridor	Receiver Name	#DU's	State Criterion (dBA)	Noise Levels - Leq (dBA)						Maximum Increase (dBA)	Impact by ≥ NAC or Substantially Exceeding Existing Noise Levels		Noise Abatement	
				Existing	No Build	Alt 1	Alt 3A	Alt 4	Alt 7		No Build	Alts	With Abatement (dBA)	Noise Reduction (dBA)
10400 S.	R280	2	70	63.6	64.3	66.5	66.8	66.0	65.6	3.2	NI(c)	NI(c)	-	-
10400 S.	R282	1	70	66.6	67.3	68.1	68.4	67.9	67.5	1.8	NI(c)	NI(c)	-	-
10400 S.	R284	1	70	59.5	60.2	62.9	63.1	62.8	62.3	3.6	NI(c)	NI(c)	-	-
10400 S.	R286	1	70	67.5	68.0	67.9	68.7	67.8	67.4	1.2	NI(c)	NI(c)	-	-
10400 S.	R288	2	65	65.3	65.6	65.9	66.4	67.9	67.4	2.6	NI	E	-	-
10400 S.	R290	1	70	68.8	70.1	71.7	71.8	70.6	70.6	3.0	NI(c)	E	-	-
10400 S.	R293	10	65	66.6	67.0	67.8	67.6	62.0	61.0	1.2	NI	NI/E	-	-
10400 S.	R295	1	65	65.7	66.3	68.2	68.1	67.4	66.9	2.5	NI	NI/E	-	-
10400 S.	R297	1	65	67.2	68.0	69.8	69.5	68.8	68.5	2.6	E	E	-	-
10400 S.	R299	1	70	67.5	65.6	70.3	70.5	69.0	69.1	3.0	NI(c)	NI/E	-	-
10400 S.	R301	1	70	63.8	62.1	71.5	71.7	70.9	70.8	7.9	NI(c)	E	-	-
10400 S.	R303	1	70	65.4	63.7	69.1	69.4	68.5	68.5	4.0	NI(c)	NI(c)	-	-
10400 S.	R305	1	70	64.4	62.8	67.7	67.9	67.1	66.9	3.5	NI(c)	NI(c)	-	-
10400 S.	R309	1	70	61.0	60.6	66.6	66.8	66.7	66.7	5.8	NI(c)	NI(c)	-	-
10400 S.	R311	1	70	56.2	56.1	65.4	65.5	64.6	64.6	9.3	NI(c)	NI(c)	-	-
10400 S.	R313	1	65	63.1	62.5	72.2	72.3	71.5	71.4	9.2	NI	E	-	-
10400 S.	R315	1	65	63.2	62.6	71.5	72.5	71.8	71.8	9.4	NI	E	68.7/68.5/68.1/68.0	2.8/4.0/3.7/3.8
10400 S.	R317	1	65	56.1	55.9	66.0	66.1	65.4	65.3	10.2	NI	E	64.4/63.9/63.8/63.7	1.6/2.2/1.6/1.6
10400 S.	R319	1	65	63.6	63.0	73.1	70.6	72.4	72.3	9.5	NI	E	-	-
10400 S.	R321	1	70	64.0	62.9	73.1	73.1	71.4	71.4	9.1	NI(c)	E	-	-
10400 S.	R323	1	70	64.1	63.0	72.4	72.6	70.4	70.5	8.5	NI(c)	E	-	-
12300 S.	R325	1	70	63.1	65.4	65.0	64.8	65.6	65.0	2.5	NI(c)	NI(c)	-	-

Table 4. Predicted Existing and Future Noise Levels (Cont.)

Corridor	Receiver Name	#DU's	State Criterion (dBA)	Noise Levels - Leq (dBA)						Maximum Increase (dBA)	Impact by ≥ NAC or Substantially Exceeding Existing Noise Levels		Noise Abatement	
				Existing	No Build	Alt 1	Alt 3A	Alt 4	Alt 7		No Build	Alts	With Abatement (dBA)	Noise Reduction (dBA)
12300 S.	R327	2	70	63.1	65.4	64.7	64.5	65.6	65.0	2.5	NI(c)	NI(c)	-	-
12300 S.	R331	1	70	63.5	65.9	64.6	64.4	66.1	65.5	2.6	NI(c)	NI(c)	-	-
12300 S.	R333	1	65	64.4	66.7	65.6	65.5	66.9	66.3	2.5	E	E	-	-
12300 S.	R335	1	65	65.1	67.5	67.1	67.0	67.6	67.0	2.5	E	E	-	-
12300 S.	R337	2	65	64.4	66.5	66.6	66.5	66.9	66.4	2.5	E	E	-	-
12300 S.	R339	3	65	63.4	65.5	65.4	65.3	66.0	65.5	2.6	E	E	-	-
12300 S.	R341	3	65	64.1	66.2	66.1	66.0	66.7	66.2	2.6	E	E	-	-
12300 S.	R343	1	65	66.2	68.3	67.2	67.1	68.9	68.4	2.7	E	E	-	-
12300 S.	R345	1	65	66.8	68.9	67.9	67.8	69.4	69.0	2.6	E	E	-	-
12300 S.	R347	1	65	63.3	65.3	65.9	65.9	65.9	65.5	2.6	E	E	-	-
12300 S.	R349	1	70	63.7	65.7	67.6	67.5	66.3	65.9	3.9	NI(c)	NI(c)	-	-
12300 S.	R351	1	65	58.7	60.8	62.6	62.5	61.3	60.8	3.9	NI	NI	-	-
12300 S.	R353	1	65	65.2	67.4	67.2	67.1	67.8	67.3	2.6	E	E	-	-
12300 S.	R355	1	70	70.3	72.2	72.5	72.5	72.5	72.3	2.2	E	E	-	-
12300 S.	R357	1	70	65.6	67.7	69.1	69.5	69.4	69.2	3.9	NI(c)	NI(c)	-	-
12300 S.	R359	1	70	64.4	66.6	68.4	68.7	68.4	68.1	4.3	NI(c)	NI(c)	-	-
12300 S.	R361	1	65	62.3	64.7	66.2	66.4	66.2	66.1	4.1	NI	E	-	-
12300 S.	R363	2	65	63.5	66.1	66.7	66.3	67.5	67.5	4.0	E	E	-	-
12300 S.	R365	3	65	61.9	64.5	65.6	64.9	65.8	65.8	3.9	NI	NI/E	-	-
12300 S.	R367	2	65	62.9	65.5	66.5	65.9	66.8	66.9	4.0	E	E	-	-
12300 S.	R369	3	65	63.3	66.0	66.9	66.3	67.3	67.3	4.0	E	E	-	-
12300 S.	R371	3	65	63.2	65.9	66.9	66.3	67.2	67.3	4.1	E	E	-	-
12300 S.	R373	2	65	61.6	64.3	65.6	65.0	65.5	65.6	4.0	NI	E	60.6/60.2	5.0/4.8

Table 4. Predicted Existing and Future Noise Levels (Cont.)

Corridor	Receiver Name	#DU's	State Criterion (dBA)	Noise Levels - Leq (dBA)						Maximum Increase (dBA)	Impact by ≥ NAC or Substantially Exceeding Existing Noise Levels		Noise Abatement	
				Existing	No Build	Alt 1	Alt 3A	Alt 4	Alt 7		No Build	Alts	With Abatement (dBA)	Noise Reduction (dBA)
12300 S.	R375	2	65	61.9	64.6	65.8	65.4	65.8	65.9	4.0	NI	E	60.2/59.8	5.6/5.6
12300 S.	R377	2	65	60.9	63.7	65.0	64.7	64.8	65.0	4.1	NI	NI/E	58.9/58.7	6.1/6.0
12300 S.	R379	1	70	60.6	63.4	64.9	64.7	64.5	64.7	4.3	NI(c)	NI(c)	-	-
12300 S.	R381	2	70	60.9	63.7	64.9	64.8	64.8	64.9	4.0	NI(c)	NI(c)	-	-
12300 S.	R383	2	70	63.6	66.3	67.5	67.8	67.5	67.6	4.2	NI(c)	NI(c)	-	-
12300 S.	R385	1	65	63.7	66.5	67.2	67.5	67.6	67.8	4.1	E	E	-	-
12300 S.	R387	1	65	56.8	59.3	62.9	62.5	60.8	60.7	6.1	NI	NI	-	-
12300 S.	R389	1	65	62.8	65.4	68.4	68.4	66.8	66.8	5.6	E	E	-	-
12300 S.	R391	3	65	61.7	64.3	66.0	64.8	65.6	65.7	4.3	NI	NI/E	-	-
12300 S.	R395	2	65	64.3	66.7	67.6	67.6	68.3	68.2	4.0	E	E	-	-
12300 S.	R397	1	65	59.6	62.4	64.0	63.8	63.3	63.6	4.4	NI	E	-	-
12300 S.	R399	1	65	61.3	64.2	66.5	66.7	64.9	65.2	5.4	NI	NI/E	-	-
12300 S.	R401	1	70	67.2	69.6	70.0	70.0	70.4	70.0	3.2	NI(c)	E	-	-
12300 S.	R403	1	70	63.2	65.3	64.6	65.1	65.3	65.2	2.1	NI(c)	NI(c)	-	-
12300 S.	R405	1	70	67.2	69.5	70.0	70.1	70.3	69.9	3.1	NI(c)	NI(c)	-	-
12300 S.	R407	1	70	66.0	67.7	67.2	67.2	67.2	67.3	1.7	NI(c)	NI(c)	-	-
12300 S.	R409	1	70	67.3	69.2	67.0	66.8	68.9	69.1	1.9	NI(c)	NI(c)	-	-
12300 S.	R411	1	70	65.7	67.6	65.6	65.2	67.3	67.6	1.9	NI(c)	NI(c)	-	-
12300 S.	R413	2	70	64.1	65.7	67.3	67.3	64.7	64.8	3.2	NI(c)	NI(c)	-	-
12300 S.	R415	1	70	64.2	66.0	69.3	69.6	65.6	65.8	5.4	NI(c)	NI(c)	-	-
12300 S.	R417	2	70	65.5	67.0	70.9	71.3	65.8	65.8	5.8	NI(c)	NI/E	-	-
12300 S.	R419	2	70	65.2	66.9	69.3	69.9	66.0	65.9	4.7	NI(c)	NI(c)	-	-
12300 S.	R421	1	65	67.3	69.1	69.7	70.4	68.4	68.4	3.1	E	E	-	-

Table 4. Predicted Existing and Future Noise Levels (Cont.)

Corridor	Receiver Name	#DU's	State Criterion (dBA)	Noise Levels - Leq (dBA)						Maximum Increase (dBA)	Impact by ≥ NAC or Substantially Exceeding Existing Noise Levels		Noise Abatement	
				Existing	No Build	Alt 1	Alt 3A	Alt 4	Alt 7		No Build	Alts	With Abatement (dBA)	Noise Reduction (dBA)
12300 S.	R423	1	65	67.3	69.3	68.4	69.1	69.1	69.0	2.0	E	E	-	-
12300 S.	R425	3	65	69.5	71.7	68.9	69.6	72.1	71.8	2.6	E	E	-	-
12300 S.	R427	1	65	66.9	69.1	67.6	68.3	69.4	69.6	2.7	E	E	-	-
12300 S.	R429	1	65	63.0	65.1	67.1	67.7	65.2	65.3	4.7	E	E	-	-
12300 S.	R431	1	65	64.0	66.3	64.0	64.7	66.3	66.5	2.5	E	NI/E	-	-
12300 S.	R433	1	65	59.7	62.0	61.2	61.8	62.2	62.3	2.6	NI	NI	-	-
12300 S.	R435	1	70	63.9	66.1	65.0	65.7	66.2	66.4	2.5	NI(c)	NI(c)	-	-
12300 S.	R437	2	65	66.7	68.9	66.9	67.6	69.1	69.3	2.6	E	E	58.5/59.1	8.4/8.5
12300 S.	R439	2	65	63.7	65.4	66.3	66.9	65.6	65.9	3.2	E	E	61.2/61.9	5.1/5.0
12300 S.	R441	5	65	62.2	63.7	65.3	65.9	63.9	64.1	3.7	NI	NI/E	59.6/60.2	5.7/5.8
12300 S.	R443	1	65	61.8	63.5	62.8	63.4	63.7	63.9	2.1	NI	NI	-	-
12300 S.	R445	1	65	59.1	60.8	60.0	60.7	61.1	61.4	2.3	NI	NI	-	-
12300 S.	R447	1	65	59.2	61.0	57.6	64.1	61.3	61.5	4.9	NI	NI	-	-
12300 S.	R449	4	65	63.4	65.2	63.0	63.5	65.6	65.7	2.3	E	NI/E	-	-
12300 S.	R452	3	70	67.6	69.2	70.6	71.3	69.3	69.5	3.7	NI(c)	NI/E	-	-
12300 S.	R454	1	70	62.7	64.5	66.5	66.6	64.2	64.2	3.9	NI(c)	NI(c)	-	-
12300 S.	R456	1	65	65.9	67.7	68.8	69.5	67.9	68.1	3.6	E	E	-	-
12300 S.	R458	2	65	68.8	70.6	71.1	71.1	70.9	70.4	2.3	E	E	-	-
12300 S.	R460	3	65	66.8	68.8	65.1	65.0	68.9	68.3	2.1	E	E	-	-
12300 S.	R462	3	65	66.3	68.6	65.7	65.6	68.6	68.2	2.3	E	E	-	-
12300 S.	R464	2	65	63.9	66.1	64.9	65.1	66.4	65.9	2.5	E	NI/E	-	-
12300 S.	R466	1	65	62.8	65.1	65.1	65.2	65.4	64.9	2.6	E	NI/E	-	-
12300 S.	R468	1	65	62.7	64.8	67.1	67.8	65.2	64.7	5.1	NI	NI/E	-	-

Table 4. Predicted Existing and Future Noise Levels (Cont.)

Corridor	Receiver Name	#DU's	State Criterion (dBA)	Noise Levels - Leq (dBA)						Maximum Increase (dBA)	Impact by ≥ NAC or Substantially Exceeding Existing Noise Levels		Noise Abatement	
				Existing	No Build	Alt 1	Alt 3A	Alt 4	Alt 7		No Build	Alts	With Abatement (dBA)	Noise Reduction (dBA)
12300 S.	R470	1	70	67.5	70.3	66.9	66.6	69.9	69.6	2.8	E	NI(c)	-	-
12300 S.	R472	1	70	67.3	69.6	70.0	70.5	69.5	69.2	3.2	NI(c)	NI/E	-	-
12300 S.	R474	1	70	66.6	68.9	70.2	70.1	68.9	68.4	3.6	NI(c)	NI/E	-	-
12300 S.	R476	1	70	64.0	66.2	68.3	68.2	66.5	66.0	4.3	NI(c)	NI(c)	-	-
12300 S.	R478	1	70	64.2	66.5	69.1	68.9	66.8	66.3	4.9	NI(c)	NI(c)	-	-
12300 S.	R480	1	70	65.2	67.4	69.6	69.5	67.8	67.3	4.4	NI(c)	NI(c)	-	-
12300 S.	R482	1	70	63.8	66.0	68.2	68.1	66.3	65.8	4.4	NI(c)	NI(c)	-	-
12300 S.	R484	2	70	67.1	69.5	70.1	70.0	69.5	68.9	3.0	NI(c)	NI/E	-	-
12300 S.	R486	1	70	64.8	67.1	69.8	69.6	67.3	66.7	5.0	NI(c)	NI(c)	-	-
12300 S.	R488	1	70	63.8	66.2	67.2	67.0	66.3	65.8	3.4	NI(c)	NI(c)	-	-
12300 S.	R490	1	70	62.7	65.1	65.7	65.5	65.2	64.6	3.0	NI(c)	NI(c)	-	-
11400 S.	R492	1	65	54.7	55.4	61.7	53.6	62.4	61.7	7.7	NI	NI	-	-
11400 S.	R493	1	65	61.0	61.9	relocated	59.1	relocated	relocated	0.9	NI	NI	-	-
11400 S.	R494	1	65	60.5	61.0	relocated	58.6	relocated	relocated	0.5	NI	NI	-	-
11400 S.	R495	1	65	56.1	57.3	relocated	55.8	relocated	relocated	1.2	NI	NI	-	-
11400 S.	R496	1	65	60.4	60.6	64.1	58.2	64.6	60.1	4.2	NI	NI	-	-
11400 S.	R497	1	65	61.0	61.3	63.4	58.6	63.5	60.4	2.5	NI	NI	-	-
11400 S.	R499	1	65	60.3	61.9	66.7	65.6	67.2	67.7	7.4	NI	E	-	-
JG/LP	R500	1	65	59.7	61.9	61.6	63.7	61.6	62.5	4.0	NI	NI	-	-
11400 S.	R501	1	65	56.8	63.6	68.1	64.1	67.5	67.4	11.3	NI	NI/E	-	-
11400 S.	R502	1	65	54.7	57.6	61.5	57.9	63.3	63.4	8.7	NI	NI	-	-
11400 S.	R503	1	65	57.5	60.0	65.0	59.4	65.3	64.4	7.8	NI	NI/E	-	-
11400 S.	R505	1	65	53.4	55.8	65.3	55.5	65.7	65.4	12.3	NI	NI/E	-	-

Table 4. Predicted Existing and Future Noise Levels (Cont.)

Corridor	Receiver Name	#DU's	State Criterion (dBA)	Noise Levels - Leq (dBA)						Maximum Increase (dBA)	Impact by ≥ NAC or Substantially Exceeding Existing Noise Levels		Noise Abatement	
				Existing	No Build	Alt 1	Alt 3A	Alt 4	Alt 7		No Build	Alts	With Abatement (dBA)	Noise Reduction (dBA)
10400 S.	R506	1	65	57.4	59.0	64.2	46.6	63.4	63.3	8.2	NI	NI/E	60.4/60.4	3.0/2.9
11400 S.	R507	1	65	n/a	n/a	64.6	n/a	63.4	61.9	n/a	NI	NI/E/S	56.2/55.2/55.4	8.4/6.2/6.5
10400 S.	R509	1	65	59.2	62.1	64.7	64.5	63.5	63.5	5.5	NI	NI	-	-
12300 S.	R511	1	65	55.8	57.9	59.6	59.4	58.4	57.9	3.8	NI	NI	-	-
12300 S.	R513	1	65	56.8	58.5	59.8	60.4	58.7	58.9	3.6	NI	NI	-	-
JG/LP	R515	1	70	68.2	69.6	69.8	70.1	69.2	69.2	1.9	NI(c)	NI/E	-	-
JG/LP	R517	1	70	69.2	71.1	67.6	68.3	70.7	71.6	2.4	E	NI/E	-	-
JG/LP	R519	1	70	64.6	66.7	65.5	65.1	66.4	66.1	2.1	NI(c)	NI(c)	-	-
JG/LP	R521	1	65	59.8	62.3	62.8	63.1	62.2	62.0	3.3	NI	NI	-	-
JG/LP	R523	1	65	59.3	61.8	61.9	61.2	62.1	61.3	2.8	NI	NI	-	-
JG/LP	R525	1	65	58.2	60.7	61.5	61.5	60.8	61.2	3.3	NI	NI	-	-
JG/LP	R527	1	65	57.9	60.4	61.1	61.2	60.6	61.4	3.5	NI	NI	-	-
JG/LP	R529	1	65	64.1	65.9	65.8	64.7	64.9	62.3	1.8	E	NI/E	-	-
JG/LP	R531	1	65	59.2	61.1	61.5	60.7	60.3	58.4	2.3	NI	NI	-	-
JG/LP	R533	1	65	57.0	59.2	59.8	59.6	59.2	57.9	2.8	NI	NI	-	-
JG/LP	R535	1	65	59.8	61.8	62.1	60.7	61.1	59.0	2.3	NI	NI	59.7	1.0
JG/LP	R537	1	65	65.2	67.1	67.1	65.2	66.4	62.9	1.9	E	NI/E	62.6	2.6
JG/LP	R539	1	65	58.6	60.8	60.7	60.1	60.7	59.4	2.2	NI	NI	-	-
JG/LP	R541	1	65	56.0	58.4	58.5	58.2	58.6	57.6	2.6	NI	NI	-	-
JG/LP	R543	1	65	55.5	57.9	58.2	58.0	58.2	57.4	2.7	NI	NI	-	-
JG/LP	R545	1	65	57.5	59.6	59.8	59.5	59.3	58.2	2.3	NI	NI	-	-
JG/LP	R547	1	65	66.3	68.0	67.7	65.6	66.8	63.2	1.7	E	NI/E	60.0	5.6
State St.	R549	1	70	66.8	68.1	68.3	68.0	68.7	69.0	2.2	NI(c)	NI(c)	-	-

Table 4. Predicted Existing and Future Noise Levels (Cont.)

Corridor	Receiver Name	#DU's	State Criterion (dBA)	Noise Levels - Leq (dBA)						Maximum Increase (dBA)	Impact by ≥ NAC or Substantially Exceeding Existing Noise Levels		Noise Abatement	
				Existing	No Build	Alt 1	Alt 3A	Alt 4	Alt 7		No Build	Alts	With Abatement (dBA)	Noise Reduction (dBA)
State St.	R551	1	70	66.6	67.2	68.2	67.5	67.7	69.3	2.7	NI(c)	NI(c)	-	-
State St.	R553	1	70	67.2	68.9	69.9	69.6	69.3	69.9	2.7	NI(c)	NI(c)	-	-
State St.	R555	1	70	68.7	69.1	69.5	68.5	70.5	67.0	1.8	NI(c)	NI(c)	-	-
State St.	R557	1	70	66.6	67.7	68.2	67.8	68.1	68.8	2.2	NI(c)	NI(c)	-	-
State St.	R559	1	70	68.7	70.0	70.3	70.3	70.5	71.2	2.5	E	E	-	-
State St.	R561	1	70	63.2	64.1	66.4	64.2	64.7	65.1	3.2	NI(c)	NI(c)	-	-
12300 S.	R563	1	65	59.0	61.4	63.5	62.7	63.0	62.9	4.5	NI	NI	-	-
12300 S.	R564	1	65	58.8	61.2	63.3	62.4	62.8	62.7	4.5	NI	NI	-	-
12300 S.	R565	1	65	58.1	60.6	63.4	62.6	62.1	62.1	5.3	NI	NI	-	-
700 W.	R570	1	65	58.4	61.3	62.1	57.8	61.4	61.2	3.7	NI	NI	-	-
700 W.	R572	1	65	52.3	55.0	58.7	53.0	58.6	57.3	6.4	NI	NI	-	-
700 W.	R574	1	65	51.6	54.5	57.1	52.1	57.1	55.8	5.5	NI	NI	-	-
700 W	R576	1	65	57.4	60.4	60.6	55.9	60.0	60.0	3.2	NI	NI	-	-
700 W	R578	1	65	66.8	70.3	69.5	66.3	69.1	69.2	3.5	E	E	-	-
700 W	R581	1	65	61.2	64.5	63.9	60.3	63.5	63.6	3.3	NI	NI	-	-

Relocated: As a result of roadway realignment, the receiver will be displaced from current location.
NI: No Impact Category B
- Noise abatement not considered.
#D.U.'s: number of dwelling units
E: Exceeds
NI(c): No Impact Category C
S: Substantially Exceeds by 10dBA or more
JG/LP: Jordan Gateway/Lone Peak Parkway
n/a: No traffic data for existing or no build. As 11400 South did not previously pass through this area, existing traffic data is not available for these receivers.
Ambient noise levels in rural areas are typically around 45 dBA.
NAC: Noise Abatement Criteria

Jordan Gateway/Lone Peak
Under the no build alternative, fourteen dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and four dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

State Street
Under the no build alternative, six dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and one dwelling unit would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

700 West Near 11400 South
Under the no build alternative, five dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and one dwelling unit would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

3.2 Alternative 1

10400/10600 South
Under Alternative 1, fifty-one dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and eighty dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

11400 South
Under Alternative 1, eighty-three dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and ninety-two dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C) or a substantial increase of 10 dBA or more.

12300/12600 South
Under Alternative 1, fifty dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and eighty-one dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

Jordan Gateway/Lone Peak
Under the Alternative 1, fifteen dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and three dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

State Street
Under Alternative 1, six dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and one dwelling unit would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

700 West Near 11400 South
Under Alternative 1, five dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and one dwelling unit would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

3.3 Alternative 3A

10400/10600 South
Under Alternative 3A, fifty-four dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and seventy-seven dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

11400 South
Under Alternative 3A, one hundred fifty-two dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and twenty-three dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

12300/12600 South
Under Alternative 3A, fifty-five dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and seventy-six dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

Jordan Gateway/Lone Peak
Under the Alternative 3A, fifteen dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and three dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

State Street
Under Alternative 3A, six dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and one dwelling unit would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

700 West Near 11400 South
Under Alternative 3A, five dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and one dwelling unit would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

3.4 Alternative 4

10400/10600 South
Under Alternative 4, sixty-one dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and seventy dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

11400 South
Under Alternative 4, sixty-eight dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and one hundred seven dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C) or a substantial increase of 10 dBA or more.

12300/12600 South
Under Alternative 4, sixty dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and seventy-one dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

Jordan Gateway/Lone Peak
Under the Alternative 4, fifteen dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and three dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

State Street
Under Alternative 4, five dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and two dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

700 West Near 11400 South
Under Alternative 4, five dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and one dwelling unit would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

3.5 Alternative 7

10400/10600 South
Under Alternative 7, sixty-two dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and sixty-nine dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

11400 South
Under Alternative 7, sixty-five dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and one hundred ten dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C) or a substantial increase of 10 dBA or more.

12300/12600 South
Under Alternative 7, sixty dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and seventy-one dwelling units would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

Jordan Gateway/Lone Peak
Under the Alternative 7, seventeen dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and one dwelling unit would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

State Street
Under Alternative 7, six dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and one dwelling unit would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

700 West Near 11400 South
Under Alternative 7, five dwelling units would experience noise levels below 65 dBA (Category B) or 70 dBA (Category C) and one dwelling unit would experience noise levels equal to or exceeding 65dBA (Category B) or 70 dBA (Category C).

Table 5 summarizes the number of noise dwelling units impacted by major routes for each Alternative.

Table 5. Number of Impacted Dwelling Units Per Alternative

Corridor	Impact									
	No Build		Alternative 1		Alternative 3A		Alternative 4		Alternative 7	
	<NAC	≥NAC	<NAC	≥NAC	<NAC	≥NAC	<NAC	≥NAC	<NAC	≥NAC
10400/10600 S.	66	65	51	80	54	77	61	70	62	69
11400 S.*	156	19	83	92**	152	23	68	107**	65	110**
12300/12600 S.	73	58	50	81	55	76	60	71	60	71
Jordan Gateway/Lone Peak	14	4	15	3	15	3	15	3	17	1
State Street	6	1	6	1	6	1	5	2	5	1
700 West Near 11400 S.	5	1	5	1	5	1	5	1	5	1
Total # of DU's ≥ NAC*		148		258		181		254		253
# of DU's ≥ 5 dBA noise mitigation*		0		39		27		29		39

NAC: Noise Abatement Criteria
* Numbers do not include relocations near 700 West.
** Numbers also include substantial increases of 10 dBA or more.
DU = Dwelling Unit

The total number of receptors over the NAC of 65 dBA or 70 dBA shown in Table 5 appear to be greatest for Alternatives 1, 4 and 7 as a result of the roadway modifications proposed for 11400 South under these alternatives. These alternatives propose widening 11400 South and adding a new roadway between River Front Parkway and 1300 West that does not currently exist. As a result, receptors along 11400 South that are not currently impacted by traffic noise show noise level increases greater than 10 dBA or 2030 noise levels greater than the NAC under Alternatives 1, 4 and 7. Many of the receptors along 12300/12600 South and 10400/10600 South are over 65 dBA regardless of the Alternative, including the No Build Alternative.

3.6 Construction

Any impact occurring to local residents as a result of construction would be temporary and minimized by compliance with UDOT standard procedures for road construction (UDOT Specification #01355 Part 1.7).

4.0 TRAFFIC NOISE ABATEMENT STRATEGIES

Future noise levels at many of the receivers exceed the NAC of 65dBA or will result in an increase of 10 dBA and require noise abatement considerations. Possible mitigation measures include the following:

- Noise barrier construction;
- Roadway realignment;
- Truck traffic restrictions;
- Traffic speed limit changes; or
- Roadway surface type modifications.

For this study, the most practical, effective measure is construction of vertical noise barriers where feasible and reasonable according to the UDOT Noise Abatement Policy. A proposed noise barrier that will not achieve a minimum of 5 decibels of noise reduction for a majority of front-row receivers, under future conditions, is not considered feasible under UDOT policy. In addition, safety and maintenance issues must be considered for a feasible design of a noise barrier. Each receiver estimated to perceive a noise reduction of 5dBA or more from the noise barrier is considered a benefited receiver. If a proposed noise barrier does not satisfy the UDOT cost criterion of $25,000 per benefited receiver, the noise abatement is not considered reasonable under UDOT policy unless a severe impact occurs. None of the alternatives resulted in a severe impact.

4.1 Mitigation

Many of the receivers predicted to experience a noise impact within the study area have direct access via driveways to the affected corridor. Gaps in noise walls caused by driveways negate a walls effectiveness to reduce noise. Therefore, areas with direct access cannot be mitigated with noise barriers. Such locations were not considered feasible or reasonable due to safety concerns and cost effectiveness and were not analyzed for noise barriers. Other areas that would result in short-term impacts, such as the Jordan River Parkway Trail, were not considered for noise barriers because potential receivers, such as walkers, joggers, or bicyclists, are moving toward the increased noise levels and then move quickly away, as the trail is perpendicular to 10600 South, 11400 South, and 12300 South. Commercial receivers and receivers such as hotels and schools were modeled for noise levels but they were not considered for noise barriers as these receivers typically desire highly visible locations and the majority of frequent human activity at these locations occurs inside the buildings. Churches were also modeled for noise impacts. All churches along the affected corridors have direct access via driveways to the corridors and therefore were not analyzed for noise barriers due to safety concerns.

The UDOT Noise Abatement Policy (UDOT, 2004) states that noise abatement will only be considered if the proposed noise barrier would achieve a minimum 5 dBA noise reduction and the cost would not exceed $25,000 per benefited receiver. Noise abatement will only be considered if the combination of 75 percent of the impacted front row receivers and 67 percent overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement.

Noise barriers were analyzed in various locations along 10400 South, 11400 South, and 12300 South. If a receiver is located along a corridor that will not be modified by an alternative, such as the western portion of 10400 South under Alternative 4, that receiver will not be analyzed for a noise barrier under that particular alternative. The Traffic Noise Model Version 2.5 was used to estimate the effectiveness of noise barriers at these locations. When necessary, additional receivers were inserted adjacent to proposed barriers to improve the analysis and associated calculations. Individual residences were not analyzed because they either had direct access to the corridor or it is highly likely the wall would not achieve a 5 dBA noise reduction or the cost to build the wall would exceed $25,000.

Twenty-five potential noise barriers were analyzed to determine the physical feasibility and the economical reasonableness of the barriers. Sixteen barriers meet the UDOT criteria of both a 5dBA or more noise reduction and $25,000 per benefited residence. The impacted areas where a continuous barrier(s) could be constructed for the benefit of individual or multiple dwelling units were as follows:

- The northeast corner residence at 10391 South 3200 West;
- The northwest corner residence at 10378 South 2700 West;
- The north side of 10400 South at approximately 2600 West;
- The south side of 10400 South at approximately 2500 West;
- The south side of 10400 South at approximately 2300 West;
- The north side of 10400 South at approximately 2200 West;
- The south side of 10400 South between Gladys Dr. (1925 West) and Culmination St. (2010 West);
- The south side of 10400 South between the Utah/Salt Lake Canal and Gladys Dr. (1925 West);
- The north and south sides of 11400 South between 1300 West and River Front Parkway (900 West);
- The south side of 12600 South at approximately 3150 West;
- The north side of 12300 South at approximately 940 West;
- The north side of 12300 South at approximately 800 West; and
- The southwest corner residence at Lone Peak Parkway and Election Rd. (11895 S.).

The analysis results are summarized in Table 6 and the barrier locations are shown in Appendix C.

4.1.1 Alternative 1

SW Corner Residence at 10430 South 3200 West
The barrier was analyzed in front of 10430 South 3200 West to analyze the noise benefits to one residence. The barrier would be approximately 222 feet long and 12 feet tall. A 3.1 dBA reduction would be realized at one residence. The cost of the noise barrier would be $22,640, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

NE Corner Residence at 10391 South 3200 West
The barrier was analyzed in front of 10391 South 3200 West to analyze the noise benefits to one residence. The barrier would be approximately 146 feet long and 9 feet tall. A 5.5 dBA reduction would be realized at one residence. The cost of the noise barrier would be $13,140 for one residence. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

NE Corner Residence at 10381 South 2840 West
The barrier was analyzed in front of 10381 South 2840 West to analyze the noise benefits to one residence. The barrier would be approximately 120 feet long and 12 feet tall. A 3.6 dBA reduction would be realized at one residence. The cost of the noise barrier would be $14,400, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

NW Corner Residence at 10378 South 2700 West
The barrier was analyzed in front of 10378 South 2700 West to analyze the noise benefits to one residence. The barrier would be approximately 76 feet long and 8.5 feet tall. A 5.1 dBA reduction would be realized at one residence. The cost of the noise barrier would be $6,460 for one residence. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

North Side of 10400 South at 2600 West
The barrier would run from 10394 South Cherry Grove Lane to 2627 West. The barrier would be approximately 928 feet long and 6 feet tall. A 6.6 to 9.3 dBA reduction would be realized at 8 front row residences. The cost of the noise barrier would be $55,640, resulting in a cost per benefited residence of $6,955. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

South Side of 10400 South at 2500 West
The barrier would run from Northforty Way to Settlers Bend Road. The barrier would be approximately 514 feet long and 6 feet tall. A 5.0 to 7.3 dBA reduction would be realized at 5 front row residences. The cost of the noise barrier would be $30,840, resulting in a cost per benefited residence of $6,168. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

South Side of 10400 South at 2300 West
The barrier would run from Hidden Crest Way to Featherwood Drive. The barrier would be approximately 533 feet long and 10 feet tall. A 5.0 to 5.6 dBA reduction would be realized at 4 front row residences. The cost of the noise barrier would be $53,300, resulting in a cost per benefited residence of $13,325. The barrier would achieve the UDOT feasibility standard of 5

dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

North Side of 10400 South at 2200 West

The barrier would run from 2200 West to Temple View Drive. The barrier would be approximately 327 feet long and 6.5 feet tall. A 5.5 dBA reduction would be realized at 2 front row residences. The cost of the noise barrier would be $21,260, resulting in a cost per benefited residence of $10,630. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

South Side of 10400 South at Approximately 10430 South Culmination St. (2010 West)

The barrier was analyzed in front of the residence at approximately 104030 South Culmination Drive. The barrier would be approximately 117 feet long and 12 feet tall. A 3.0 dBA reduction would be realized at one residence. The cost of the noise barrier would be $14,040, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

South Side of 10400 South Between Gladys Dr. (1925 West) and Culmination St. (2010 West)

The barrier would run from Gladys Dr. to Culmination St. The barrier would be approximately 436 feet long and 8 feet tall. A 4.2 to 5.9 dBA reduction would be realized at 4 front row residences with 3 residences experiencing a 5 dBA noise reduction. The cost of the noise barrier would be $34,800 resulting in a cost per benefited residence of $11,627. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

South Side of 10400 South at 1547 West

A barrier was analyzed in front of 1547 West to analyze the noise benefits to two residences impacted by 10400 South. The barrier would be approximately 138 feet long and 12 feet tall. A 1.6 to 2.8 dBA reduction would be realized at two residences. The cost of the noise barrier would be $16,560, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

North Side of 11400 South at 800 West
Two adjacent barriers were analyzed on the north side of 11400 South bordering the residential properties at the south end of Berg Hollow Lane (805 West) and Rick Circle (765 West). Two barriers were needed as a result of changing terrain. Together, the barriers would be approximately 520 feet long and 12 feet tall. A 0.7 to 3.0 dBA reduction would be realized at 4 residences. The cost of the noise barrier would be $62,400, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

North and South Sides of 11400 South from River Front Parkway to 1300 West
As 11400 South did not previously pass through this area, existing traffic data is not available for these receivers. Ambient noise levels in rural areas are typically around 45 dBA. The possible barriers for this area are described below.

North Side of 11400 South between River Front Parkway (900 West) and Chapel View Dr. (1060 West)
The barrier would be approximately 971 feet long and 10 feet tall. A 5.4 to 11.3 dBA reduction would be realized at 10 front row residences. The cost of the noise barrier would be $97,100 resulting in a cost per benefited residence of $9,710. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

South Side of 11400 South between River Front Parkway and Chapel View Dr.
The barrier would be approximately 965 feet long and 12 feet tall. A 5.2 to 6.9 dBA reduction would be realized at 9 front row residences. The cost of the noise barrier would be $115,800 resulting in a cost per benefited residence of $12,867. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

North Side of 11400 South between Chapel View Dr. and Palisade Rim Dr.
The barrier would be approximately 1,127 feet long and between 6 and 8 feet tall; these heights are on top of the large cut wall proposed for this area. A 5.0 to 10.3 dBA reduction would be

Table 6. Noise Barrier Calculations

Barrier Name	Barrier Location	Applicable Alternatives	Number of Benefited Residences	Noise Reduction Range Per Benefited Residence (dBA)	Barrier Height Range/Average Barrier Height (ft)	Barrier Length (ft)	Barrier Area (ft2)	Barrier Cost [a] ($)	Cost Per Benefited Residence [b] ($)	Criteria Met?[c] Yes or No
174 Wall	10430 S. 3200 W. (SW Corner Lot)	1,3A	0/0	3.1/3.1	12/12	222	2,264	$22,640	n/b	No
253 Wall	10391 S. 3200 W. (NE Corner Lot)	1,3A	1/1	5.5/5.4	9/9	146	1,314	$13,140	$13,140	Yes
243 Wall	10381 S. 2840 W. (NE Corner Lot)	1,3A	0/0	3.6/2.8	12/12	120	1,440	$14,400	n/b	No
241 Wall	10378 S. 2700 W. (NW Corner Lot)	1,3A	1/1	5.1/5.2	8.5/8.5	76	646	$6,460	$6,460	Yes
235 Wall	North Side of 10400 S. Approximately 2600 West	1,3A	8/8	6.6-9.3/6.9–9.0	6/6	928	5,564	$55,640	$6,955	Yes
197 199 Wall	South Side of 10400 S. Approximately 2500 West	1,3A	5/5	5.0–7.3/5.4-6.3	6/6	514	3,084	$30,840	$6,168	Yes
203 205 Wall	South Side of 10400 S. Approximately 2300 West	1	4	5.0-5.6	10/10	533	5,330	$53,300	$13,325	Yes
225 Wall	North Side of 10400 S. Approximately 2200 West	1,3A	2	5.5/5.4	6.5/6.5	327	2,126	$21,260	$10,630	Yes
West of 215	Approximately 10430 S. Culmination Dr. (2010 W.)	1	0	3.0	12/12	117	1,404	$14,040	n/b	No
215 Wall	South Side of 10400 S. between Gladys Dr. (1925 W.) and Culmination St. (2010 W.)	1	3	4.2-5.9/	8/8	436	3,488	$34,880	$11,627	Yes
506 Wall	South Side of 10400 S. between Salt Lake Canal and Gladys Dr. (1925 W.)	7	4	2.9-6.2	8/8	843	6,744	$67,440	$16,860	Yes
315 Wall	South Side of 10400 S. Approximately 1547 West	1,3A,7	0/0/0/0	1.6-2.8/2.2-4.0/1.6-3.8	12/12	138	1,656	$16,560	n/b	No
800 West Barrier 1& Barrier 2	North Side of 11400 S. Approximately 800 West	1,4,7	0/na/na	0.7-3.0 /0.7-3.1/0.7-3.0	12/12	520	6,240	$62,400	n/b	No
River Park North Wall	North Side of 11400 S. between River Front Parkway (900 West) and Chapel View Dr.(1060 West)	1 4 7	10 5 10	5.4-11.3 3.7–7.2 5.5-11.4	10/10 12/12 10/10	971	9,710 11,658 9,710	$97,100 $116,580 $97,100	$9,710 $23,316 $9,710	Yes Yes Yes
River Park South Wall	South Side of 11400 S. between River Front Parkway and Chapel View Dr.	1 4 7	9 4 9	5.2-6.9 4.3-7.2 5.8-9.2	12/12 12/12 8/8	965	11,580 11,580 7,720	$115,800 $115,800 $77,200	$12,867 $28,950 $8,578	Yes No Yes
Chapel Ridge North Wall	North Side of 11400 S. between Chapel View Dr. and Palisade Rim Dr.(1162 West)	1 4 7	12 9 9	5.0-10.3 4.1-9.8 3.9-10.0	6-8/7[d] 6-8/7[d] 6-8/7[d]	1,127	9,471 9,471 9,471	$94,710 $94,710 $94,710	$7,893 $10,523 $10,523	Yes Yes Yes
Chapel Ridge South Wall	South Side of 11400 S. between Chapel View Dr. and Palisade Rim Dr.	1 4	8 11	4.0-10.3 5.1-9.1	4-12/8[d] 4-12/8[d]	1,126	10,046 10,046	$100,460 $100,460	$12,558 $12,558	Yes Yes

a Assumes cost of $10/ft^2 based on average UDOT bid prices for 2001 - 2004.

b Costs may change due to final design considerations.

c If no, does not meet noise reduction requirements of greater than or equal to 5 dBA and/or exceeds cost per benefited residence of $25,000.

d These barrier heights do not include the cut wall heights.

n/b: no benefited residence

Table 6. Noise Barrier Calculations

Barrier Name	Barrier Location	Applicable Alternatives	Number of Benefited Residences	Noise Reduction Range Per Benefited Residence (dBA)	Barrier Height Range/Average Barrier Height (ft)	Barrier Length (ft)	Barrier Area (ft2)	Barrier Cost [a] ($)	Cost Per Benefited Residence [b] ($)	Criteria Met?[c] Yes or No
		7	11	5.1-10.0	4-12/8[d]		9,358	$93,580	$8,507	Yes
1300 West North Wall	North Side of 11400 S. between Palisade Rim Dr. and 1300 West	1,4,7	1/1/1	3.7-5.2/3.6-5.1/ 3.6-5.2	12/12	741	8,892	$88,920	$88,920	No
1300 West South Wall	South Side of 11400 S. between Palisade Rim Dr. and 1300 West	1,4,7	0/0/0	2.5-3.9/2.3-3.8/ 2.2-3.9	12/12	735	8,820	$88,220	n/b	No
373 Wall	South Side of 12600 S. Approximately 3150 West	1,3A	6/4	5-6.1/4.8-6.0	8/8	628	4,400	$44,000	$7,333 $11,000	Yes
460 Wall	Approximately 12594 S. 1540 W. (NE Corner Lot)	1,3A	0/0	2.3/2.2	12/12	81	972	$9,720	n/b	No
441 Wall	North Side of 12300 S. Approximately 940 West	1,3A	4/4	3.6-5.7/3.7-5.8	6/6	541	3,247	$32,470	$8,118	Yes
437 Wall	North Side of 12300 S. Approximately 800 West	1,3A	4/4	5.1-8.4/5.0-8.5	8/8	469	3,754	$37,540	$9,385	Yes
537 Wall	Northwest Corner of Lone Peak Parkway and Inauguration Rd. (11815 S.)	3A	0	1.0-2.6	12/12	164	1,968	$19,680	n/b	No
547 Wall	Southwest Corner of Lone Peak Parkway and Election Rd. (11895 S.)	3A	1	5.6	12	197	2,364	$23,640	$23,640	Yes

a Assumes cost of $10/ft^2 based on average UDOT bid prices for 2001 - 2004.

b Costs may change due to final design considerations.

c If no, does not meet noise reduction requirements of greater than or equal to 5 dBA and/or exceeds cost per benefited residence of $25,000.

d These barrier heights do not include the cut wall heights.

n/b: no benefited residence

realized at 12 residences. The cost of the noise barrier would be $94,710 resulting in a cost per benefited residence of $7,893. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

South Side of 11400 South between Chapel View Dr. and Palisade Rim Dr
The barrier would be approximately 1,126 feet long and between 4 and 12 feet tall; these heights are on top of the large cut wall proposed for this area. A 4.0 to 10.3 dBA reduction would be realized at 11 front row residences with 8 residences experiencing a 5 dBA noise reduction. The cost of the noise barrier would be $100,460 resulting in a cost per benefited residence of $12,558. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

North Side of 11400 South between Palisade Rim Dr. and 1300 West
The barrier would be approximately 741 feet long and between 12 feet tall. A 3.7 to 5.2 dBA reduction would be realized at 3 front row residences with 1 residence experiencing a 5 dBA noise reduction. The cost of the noise barrier would be $88,920 with one benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction and it would not meet the $25,000 cost reasonableness criteria.

South Side of 11400 South between Palisade Rim Dr. and 1300 West
The barrier would be approximately 735 feet long and between 12 feet tall. A 2.5 to 3.9 dBA reduction would be realized at 2 front row residences. The cost of the noise barrier would be $88,220 with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction and it would not meet the $25,000 cost reasonableness criteria.

South Side of 12600 South at 3150 West
The barrier would run from 3110 West to 3168 West. The barrier would be approximately 628 feet long and 8 feet tall. A 5.0 to 6.1 dBA reduction would be realized at 6 front row residences. The cost of the noise barrier would be $44,000, resulting in a cost per benefited residence of $7,333. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

NE Corner Residence at Approximately 12594 South 1540 West
The barrier was analyzed in front of the residence at approximately 12594 South 1540. The barrier would be approximately 81 feet long and 12 feet tall. A 2.3 dBA reduction would be realized at one residence. The cost of the noise barrier would be $9,720, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

North Side of 12300 South at 940 West
The barrier would run from 897 West to 943 West. The barrier would be approximately 541 feet long and 6 feet tall. A 3.6 to 5.7 dBA reduction would be realized at 5 front row residences; 4 residences would see a 5 dBA or greater reduction. The cost of the noise barrier would be $32,470, resulting in a cost per benefited residence of $8,118. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

North Side of 12300 South at 800 West
The barrier would run from 12269 South Stevens Circle to 827 West. The barrier would be approximately 469 feet long and 8 feet tall. A 5.1 to 8.4 dBA reduction would be realized at 4 residences. The cost of the noise barrier would be $37,540, resulting in a cost per benefited residence of $9,385. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

4.1.2 Alternative 3A

SW Corner Residence at 10430 South 3200 West
The barrier was analyzed in front of 10430 South 3200 West to analyze the noise benefits to one residence. The barrier would be approximately 222 feet long and 12 feet tall. A 3.1 dBA reduction would be realized at one residence. The cost of the noise barrier would be $22,640, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

NE Corner Residence at 10391 South 3200 West
The barrier was analyzed in front of 10391 South 3200 West to analyze the noise benefits to one residence. The barrier would be approximately 146 feet long and 9 feet tall. A 5.4 dBA reduction would be realized at one residence. The cost of the noise barrier would be $13,140 for one residence. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost

reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

NE Corner Residence at 10381 South 2840 West
The barrier was analyzed in front of 10381 South 2840 West to analyze the noise benefits to one residence. The barrier would be approximately 120 feet long and 12 feet tall. A 2.8 dBA reduction would be realized at one residence. The cost of the noise barrier would be $14,400, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

NW Corner Residence at 10378 South 2700 West
The barrier was analyzed in front of 10378 South 2700 West to analyze the noise benefits to one residence. The barrier would be approximately 76 feet long and 8.5 feet tall. A 5.2 dBA reduction would be realized at one residence. The cost of the noise barrier would be $6,460 for one residence. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

North Side of 10400 South at 2600 West
The barrier would run from 10394 South Cherry Grove Lane to 2627 West. The barrier would be approximately 928 feet long and 6 feet tall. A 6.9 to 9.0 dBA reduction would be realized at 8 front row residences. The cost of the noise barrier would be $55,640, resulting in a cost per benefited residence of $6,955. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

South Side of 10400 South at 2500 West
The barrier would run from Northforty Way to Settlers Bend Road. The barrier would be approximately 514 feet long and 6 feet tall. A 5.4 to 6.3 dBA reduction would be realized at 5 front row residences. The cost of the noise barrier would be $30,840, resulting in a cost per benefited residence of $6,168. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5

dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

South Side of 10400 South at 2300 West
This barrier is not necessary for Alternative 3A, as the expected noise level at receiver R205 is below 65 dBA and, therefore, does not require noise mitigation.

North Side of 10400 South at 2200 West
The barrier would run from 2200 West to Temple View Drive. The barrier would be approximately 327 feet long and 6.5 feet tall. A 5.4 dBA reduction would be realized at 2 front row residences. The cost of the noise barrier would be $21,260, resulting in a cost per benefited residence of $10,630. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval

South Side of 10400 South at 1547 West
A barrier was analyzed in front of 1547 West to analyze the noise benefits to two residences impacted by 10400 South. The barrier would be approximately 138 feet long and 12 feet tall. A 2.2 to 4.0 dBA reduction would be realized at two residences. The cost of the noise barrier would be $16,560, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

South Side of 12600 South at 3150 West
The barrier would run from 3110 West to 3168 West. The barrier would be approximately 628 feet long and 8 feet tall. A 4.8 to 6.0 dBA reduction would be realized at 6 front row residences, with 4 benefited residences. The cost of the noise barrier would be $44,000, resulting in a cost per benefited residence of $22,000. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

NE Corner Residence at Approximately 12594 South 1540 West
The barrier was analyzed in front of the residence at approximately 12594 South 1540. The barrier would be approximately 81 feet long and 12 feet tall. A 2.2 dBA reduction would be realized at one residence. The cost of the noise barrier would be $9,720, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

North Side of 12300 South at 940 West
The barrier would run from 897 West to 943 West. The barrier would be approximately 541 feet long and 6 feet tall. A 3.7 to 5.8 dBA reduction would be realized at 5 front row residences; 4 residences would see a 5 dBA or greater reduction. The cost of the noise barrier would be

$32,470, resulting in a cost per benefited residence of $8,118. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

North Side of 12300 South at 800 West
The barrier would run from 12269 South Stevens Circle to 827 West. The barrier would be approximately 469 feet long and 8 feet tall. A 5.0 to 8.5 dBA reduction would be realized at 4 residences. The cost of the noise barrier would be $37,540, resulting in a cost per benefited residence of $9,385. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

West Side of Lone Peak Parkway Between Inauguration Rd. (11815 S.) and Bubbling Brook Dr.
The barrier was analyzed in front of two residences between Inauguration Rd. and Bubbling Brook Dr. on the west side of Lone Peak Parkway. The barrier would be approximately 164 feet long and 12 feet tall. A 1.0-2.6 dBA reduction would be realized at two residences. The cost of the noise barrier would be $19,680, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

SW Corner Residence at Lone Peak Parkway and Election Rd. (11895 S.)
The barrier was analyzed in front of one residence on the SW Corner of Lone Peak Parkway and Election Road. The barrier would be approximately 197 feet long and 12 feet tall. A 5.6 dBA reduction would be realized at one residence. The cost of the noise barrier would be $23,640 for the one residence. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

4.1.3 Alternative 4

North Side of 11400 South at 800 West
Two adjacent barriers were analyzed on the north side of 11400 South bordering the residential properties at the south end of Berg Hollow Lane (805 West) and Rick Circle (765 West). Two barriers were needed as a result of changing terrain. Together, the barriers would be

approximately 520 feet long and 12 feet tall. A 0.7 to 3.1 dBA reduction would be realized at 4 residences. The cost of the noise barrier would be $62,400, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

North and South Sides of 11400 South from River Front Parkway to 1300 West

North Side of 11400 South between River Front Parkway (900 West) and Chapel View Dr. (1060 West)
The barrier would be approximately 971 feet long and 12 feet tall. A 3.7 to 7.2 dBA reduction would be realized at 10 front row residences, 5 residences would have 5dBA or more noise reduction. The cost of the noise barrier would be $116,580 resulting in a cost per benefited residence of $23,316. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

South Side of 11400 South between River Front Parkway and Chapel View Dr.
The barrier would be approximately 965 feet long and 12 feet tall. A 4.3 to 7.2 dBA reduction would be realized at 9 front row residences, with 4 residences experiencing a 5 dBA or more noise reduction. The cost of the noise barrier would be $115,800 resulting in a cost per benefited residence of $28,950. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would not meet the $25,000 cost reasonableness criteria per benefited receiver.

North Side of 11400 South between Chapel View Dr. and Palisade Rim Dr.
The barrier would be approximately 1,127 feet long and between 6 and 8 feet tall; these heights are on top of the large cut wall proposed for this area. A 4.1 to 9.8 dBA reduction would be realized at 12 residences, with 9 residences experiencing a 5 dBA or greater noise reduction. The cost of the noise barrier would be $94,710 resulting in a cost per benefited residence of $10,523. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval

South Side of 11400 South between Chapel View Dr. and Palisade Rim Dr
The barrier would be approximately 1,126 feet long and between 4 and 12 feet tall; these heights are on top of the large cut wall proposed for this area. A 5.1 to 9.1 dBA reduction would be realized at 11 front row residences. The cost of the noise barrier would be $100,460 resulting in a cost per benefited residence of $12,558. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement

will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

North Side of 11400 South between Palisade Rim Dr. and 1300 West
The barrier would be approximately 741 feet long and 12 feet tall. A 3.6 to 5.1 dBA reduction would be realized at 3 front row residences with 1 residence experiencing a 5 dBA noise reduction. The cost of the noise barrier would be $88,920 with one benefited residence. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction and it would not meet the $25,000 cost reasonableness criteria.

South Side of 11400 South between Palisade Rim Dr. and 1300 West
The barrier would be approximately 735 feet long and 12 feet tall. A 2.3-3.8 dBA reduction would be realized at 2 front row residences. The cost of the noise barrier would be $88,220 with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction and it would not meet the $25,000 cost reasonableness criteria.

4.1.4 Alternative 7

South Side of 10400 South Between Gladys Drive (1925 West) and the Utah and Salt Lake Canal
The barrier would run from Gladys Dr. to the Utah/Salt Lake Canal. The barrier would be approximately 843 feet long and 8 feet tall. A 2.9 to 6.2 dBA reduction would be realized at 5 front row residences with 4 residences experiencing a 5 dBA noise reduction. The cost of the noise barrier would be $67,440 resulting in a cost per benefited residence of $16,860. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

South Side of 10400 South at 1547 West
A barrier was analyzed in front of 1547 West to analyze the noise benefits to two residences impacted by 10400 South. The barrier would be approximately 138 feet long and 12 feet tall. A 1.6 to 3.8 dBA reduction would be realized at two residences. The cost of the noise barrier would be $16,560, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

North Side of 11400 South at 800 West
Two adjacent barriers were analyzed on the north side of 11400 South bordering the residential properties at the south end of Berg Hollow Lane (805 West) and Rick Circle (765 West). Two barriers were needed as a result of changing terrain. Together, the barriers would be approximately 520 feet long and 12 feet tall. A 0.7 to 3.0 dBA reduction would be realized at 4 residences. The cost of the noise barrier would be $62,400, with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction.

North and South Sides of 11400 South from River Front Parkway to 1300 West

North Side of 11400 South between River Front Parkway (900 West) and Chapel View Dr. (1060 West)
The barrier would be approximately 971 feet long and 10 feet tall. A 5.5 to 11.4 dBA reduction would be realized at 10 front row residences. The cost of the noise barrier would be $97,100 resulting in a cost per benefited residence of $9,710. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

South Side of 11400 South between River Front Parkway and Chapel View Dr.
The barrier would be approximately 965 feet long and 8 feet tall. A 5.8 to 9.2 dBA reduction would be realized at 9 front row residences. The cost of the noise barrier would be $77,200 resulting in a cost per benefited residence of $8,578. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval

North Side of 11400 South between Chapel View Dr. and Palisade Rim Dr.
The barrier would be approximately 1,127 feet long and between 6 and 8 feet tall; these heights are on top of the large cut wall proposed for this area. A 3.9 to 10.0 dBA reduction would be realized at 12 residences, with 9 residences experiencing a 5 dBA or greater noise reduction. The cost of the noise barrier would be $94,710 resulting in a cost per benefited residence of $10,523. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

South Side of 11400 South between Chapel View Dr. and Palisade Rim Dr
The barrier would be approximately 1,126 feet long and between 4 and 12 feet tall; these heights are on top of the large cut wall proposed for this area. A 5.1 to 10.0 dBA reduction would be realized at 11 front row residences. The cost of the noise barrier would be $93,580 resulting in a cost per benefited residence of $8,507. The barrier would achieve the UDOT feasibility standard of 5 dBA or greater noise reduction for the majority of front-row receivers, and it would meet the $25,000 cost reasonableness criteria per benefited receiver. Final construction of any noise abatement will depend upon public input and final design considerations. Noise abatement will

only be considered if the combination of 75% of the impacted front row receivers and 67% overall (including front row receivers) of the impacted residents who receive a minimum of 5 dBA reduction vote, through balloting, in favor of the abatement (UDOT, 2004). Balloting of affected residents will be conducted prior to the final environmental document approval.

North Side of 11400 South between Palisade Rim Dr. and 1300 West
The barrier would be approximately 741 feet long and 12 feet tall. A 3.6 to 5.2 dBA reduction would be realized at 3 front row residences with 1 residence experiencing a 5 dBA noise reduction. The cost of the noise barrier would be $88,920 with one benefited residence. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction and it would not meet the $25,000 cost reasonableness criteria.

South Side of 11400 South between Palisade Rim Dr. and 1300 West
The barrier would be approximately 735 feet long and 12 feet tall. A 2.2 to 3.9 dBA reduction would be realized at 2 front row residences. The cost of the noise barrier would be $88,220 with no benefited residences. The barrier would not achieve the UDOT feasibility standard of 5 dBA or greater noise reduction and it would not meet the $25,000 cost reasonableness criteria.

5.0 CONCLUSIONS

The feasible and reasonable noise mitigation measures identified in this report should be constructed if desired by the public and final design of the preferred alternative determines its construction is still feasible. Depending on the alternative, the number of noise barriers that meet UDOT criteria and are proposed to reduce future noise impacts are summarized in Table 7.

Table 7. Recommended Noise Barriers Per Alternative

Barrier Name	Alternative 1	Alternative 3A	Alternative 4	Alternative 7
253 Wall	Yes	Yes	No	No
241 Wall	Yes	Yes	No	No
235 Wall	Yes	Yes	No	No
197 199 Wall	Yes	Yes	No	No
203 205 Wall	Yes	No	No	No
225 Wall	Yes	Yes	No	No
215 Wall	Yes	No	No	No
506 Wall	No	No	No	Yes

River Park North Wall	Yes	No	Yes	Yes
River Park South Wall	Yes	No	No	Yes
Chapel Ridge North Wall	Yes	No	Yes	Yes
Chapel Ridge South Wall	Yes	No	Yes	Yes
373 Wall	Yes	Yes	No	No
441 Wall	Yes	Yes	No	No
437 Wall	Yes	Yes	No	No
547 Wall	No	Yes	No	No

REFERENCES

Federal Highway Administration (FHWA), 1995. Highway Traffic Noise Analysis and Abatement Policy and Guidance, U.S. Department of Transportation, June 1995.

Utah Department of Transportation (UDOT), 2004. Noise Abatement, UDOT 08A2-1, Effective November 7, 1987, Revised: March 8, 2004.

APPENDIX A

Alternatives

No Build Alternative

The No Build Alternative is defined as no new major construction within the study area, other than projects that are already in the WFRC Long-Range Plan. Minor spot improvements, Transportation Management (TM) measures, or signal projects may be constructed under the No Build Alternative.

Following are the roadway and transit improvement projects that are included in the WFRC Long-Range Plan. Phase 1 improvements are scheduled to occur between 2004 and 2012, Phase 2 improvements are scheduled between 2013 and 2022, and Phase 3 improvements are scheduled between 2023 and 2030.

1. Widen 12300/12600 to four lanes* from Bangerter Highway to 700 East (under construction);
2. Widen 10400/10600 South to four lanes* from Bangerter Highway to Redwood Road (Phase 1);
3. Widen Redwood Road to four lanes* from Bangerter Highway to 10400 South (Phase 1);
4. Widen I-15 to 10 lanes from 10600 South to the Alpine Exit (Phase 1 through Phase 3);
5. Widen 700 East to four lanes* from 12300 South to 9400 South (Phase 1);
6. Widen State Street four lanes* south of 11400 South (construction planned for 2004);
7. Widen State Street to six lanes* north of 11400 South (Phase 1);
8. New Mountain View Corridor Transportation Route six lane facility (Phase 1 through Phase 3);
9. Draper Extension of the existing light rail line (Phase 2);
10. Mid Jordan light rail line extension (Phase 1);
11. Commuter rail line from Utah County to Weber County (Phase 2);
12. Widen 11400 South to four lanes* from I-15 to 700 East (Phase 1);
13. Redwood Road Bus Rapid Transit (BRT) line from 14400 South to 8000 South (Phase 2); and
14. Mountain View BRT line from 13400 South to 4700 South (Phase 2).

*Assumes an additional center turn lane or median

Alternative 1

In addition to the projects and TM measures identified under the No Build Alternative, Alternative 1 includes the following components. As mentioned previously, the italics indicate components that were added to the alternative and the strike-through indicates components that were eliminated.

A. Widen 10400/10600 South to six lanes* from Bangerter Highway to Jordan Gateway
B. Widen 12300/12600 South to six lanes* from Bangerter Highway to Lone Peak Parkway
C. Add a river crossing at 11400 South and widen to four lanes*
D. Add I-15 underpass at 11000 South, extend to the west to Jordan Gateway
E. Add I-15 overpass at 11800 South, extend to the west to Lone Peak
F. Modifications to I-15 interchange at 10600 South – triple left southbound to eastbound
G. Widen State Street to six lanes* from 12300 South to 11400 South

* Assumes an additional center turn lane or median

Alternative 3A

Alternative 3A was originally called Alternative 3. However, based on citizen input received, two variations of Alternative 3 were added to the preliminary alternatives list and further evaluated. Alternative 3 was renamed Alternative 3A, and the two variations, shown following this alternative, were named 3B and 3C.

In addition to the projects and TM measures identified under the No Build Alternative,

Alternative 3A includes the following components.

A. Widen 10400/10600 South to six lanes* from Bangerter Highway to Jordan Gateway
B. Widen 12300/12600 South to six lanes* from Bangerter Highway to Lone Peak Parkway
C. Modifications to I-15 interchange at 10600 South – triple left southbound to eastbound
D. Add I-15 underpass at 11000 South; extend to the west to Jordan Gateway
E. Add I-15 overpass at 11800 South; extend to the west to Lone Peak Parkway
F. Widen Jordan Gateway to six lanes* from 10600 South to 12300 South

* Assumes an additional center turn lane or median

Alternative 4

In addition to the projects and TM measures identified under the No Build Alternative, Alternative 4 includes the following components.

A. Add an interchange at 11400 South and I-15, with auxiliary lane on I-15 northbound and I-15 southbound between 11400 South and 10600 South.
B. Add a river crossing at 11400 South and widen to four lanes* from Bangerter Highway to State Street.
C. Intersection improvements at 11400 South and Bangerter Highway.
D. Intersection improvements on Jordan Gateway/Lone Peak Parkway at 10600 South, 11400 South, and 12300 South.
E. Modifications to I-15 interchange at 10600 South – triple left southbound to eastbound.
F. Widen 10600 South to six lanes* from just west of River Front Parkway to Jordan Gateway.

* Assumes an additional center turn lane or median

Alternative 7

In addition to the projects and TM measures identified under the No Build Alternative, Alternative 7 includes the following components.

A. Extend 11400 South across the Jordan River and widen 11400 South to four lanes from Bangerter Highway to State Street
B. Intersection improvements at 11400 South and Bangerter Highway
C. Widen 10600 South to six lanes from Redwood Road to Jordan Gateway
D. Widen Jordan Gateway/Lone Peak Parkway to six lanes* from 12300 South to 10600 South
E. Modifications to I-15 interchange at 10600 South – triple left southbound to eastbound

* Assumes an additional center turn lane or median

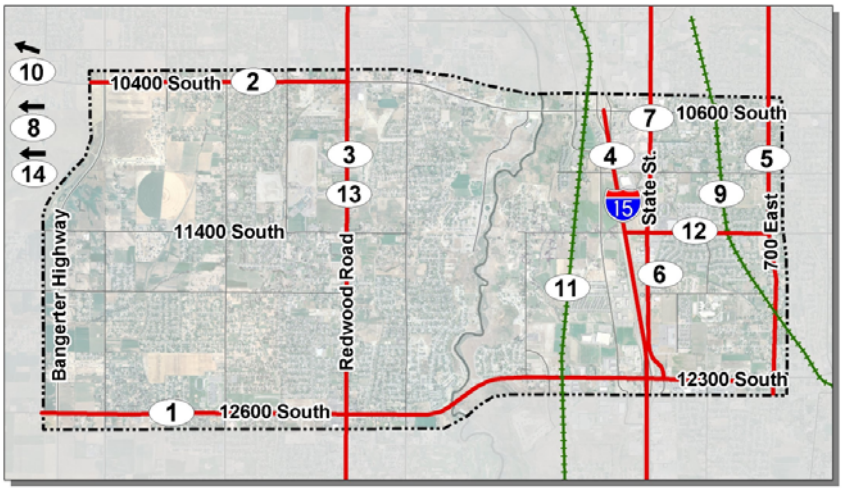


Figure B-1. No Build Alternative

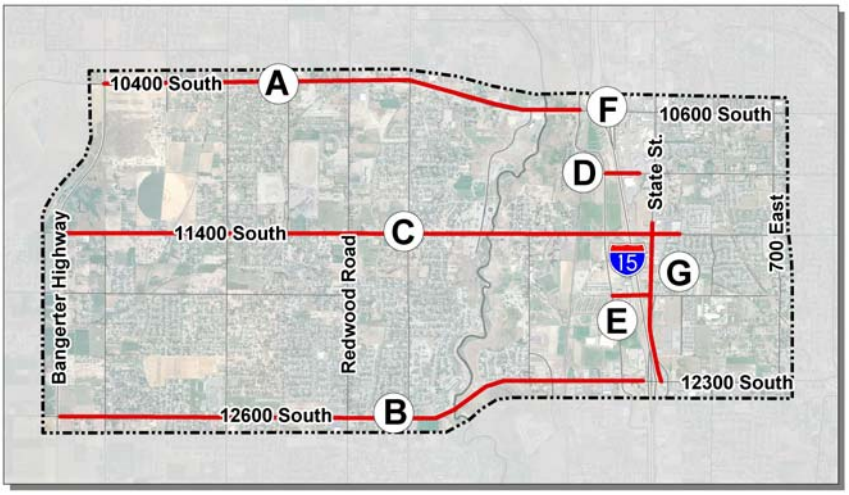


Figure B-2. Alternative 1

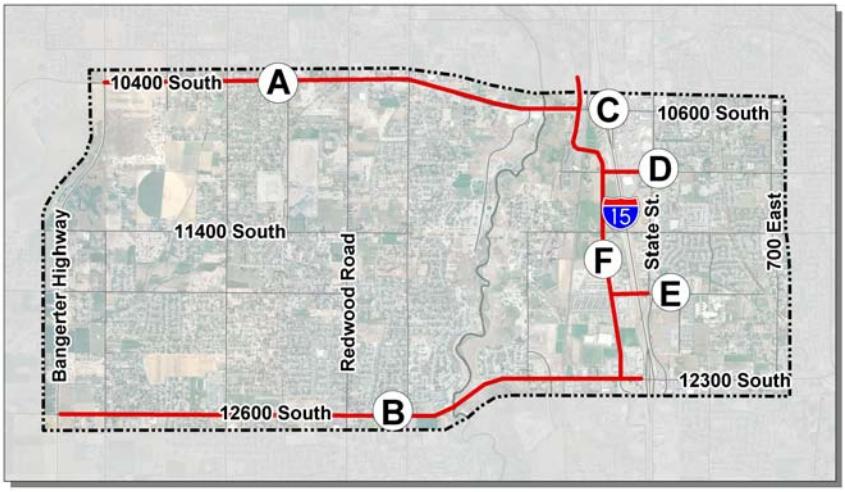


Figure B-3. Alternative 3A

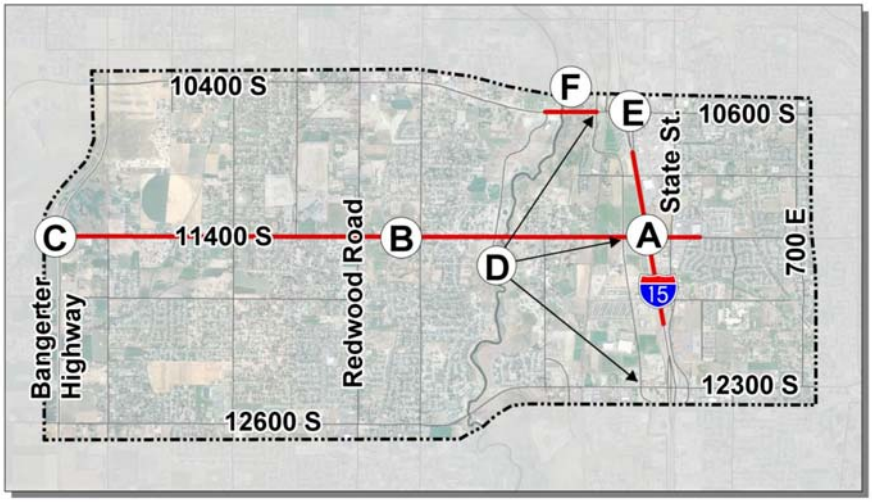


Figure B-4. Alternative 4

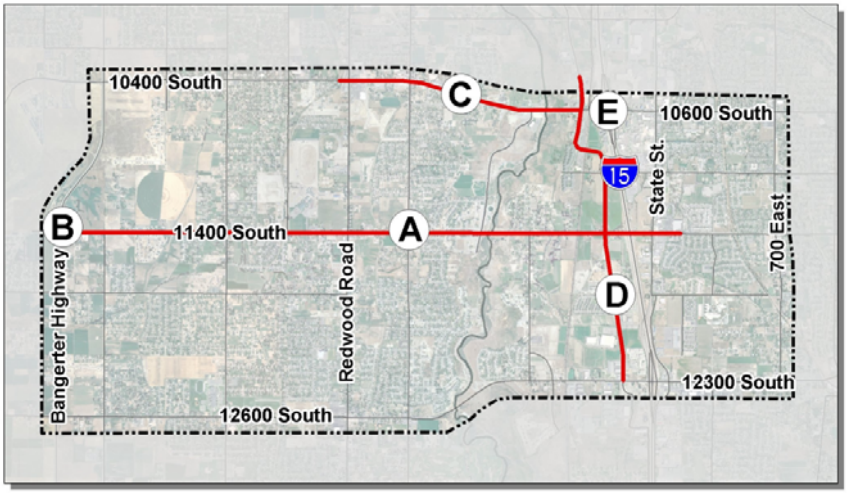


Figure B-5. Alternative 7

APPENDIX B

UDOT Noise Abatement Policy

Purpose

To establish the policy and procedure for conducting traffic noise studies, implementing noise abatement measures and coordinating with local municipalities and the public to ensure that all feasible and reasonable mitigation measures are incorporated into projects to minimize noise impacts and protect the public health and welfare.

Policy

The Utah Department of Transportation recognizes a commitment to minimize noise impacts generated by highway traffic that may adversely impact human activity and the quality of life of residents located in the vicinity of heavily traveled roads. UDOT will install noise mitigation measures according to the guidelines and requirements set forth in the Procedure implementing this policy. The highway traffic noise prediction requirements, noise analysis, and noise abatement criteria in this regulation are consistent with *Federal Regulation 23 CFR 772 - Procedures for Abatement of Highway Traffic Noise and Construction Noise* and *Utah Code 72-6-111 & 112.*

Background

A. Applicability

1. Type I Project - Noise abatement will be considered for Type I projects where noise impacts are identified. A Type I project is one that includes construction of a transportation facility on a new location, increases the number of through traffic lanes or substantially alters the horizontal or vertical alignment of an existing transportation facility.

   Noise impact analyses will include lands within Land Use Activity Categories A, B, and C only when development is existing or Aplanned, designed, and programmed@. (See Table 1) UDOT will consider a development as being Aplanned, designed, and programmed@ when a formal building permit has been issued to the developer prior to the date the final environmental decision document is approved. This same criteria will be used when determining if the owner/resident of these same lands will be allowed to cast a ballot- for or against noise abatement if the analyses determines it is reasonable and feasible (See Section C.5, Public Involvement). Noise impact analysis will not be considered for undeveloped lands.

Type II Project - The Utah Department of Transportation does not provide a noise retrofit (Type II) program to construct noise abatement measures on existing state transportation facilities.

B. Analysis of Traffic Noise Impacts and Abatement Measures

1. The Department will evaluate expected traffic noise impacts associated with Type I projects and abatement measures to mitigate these impacts.

2. The traffic noise analysis will include the following:

   a. Identification of existing activities, developed lands, and undeveloped lands for which development is planned, designed and programmed. (See definition under Section A.1)

   b. Determination of existing and future build noise levels.

   c. Determination of traffic noise impacts.

   d. Examination and evaluation of alternative noise abatement measures for reducing or eliminating noise impacts.

3. UDOT considers traffic noise impacts to occur when either of the following conditions occur at a sensitive land use area:

   a. The design noise level is greater than or equal to the UDOT Noise Abatement Criterion (NAC) in Table 1 for each corresponding land use category.

Table 1
UDOT Noise Abatement Criteria (NAC)
Based on FHWA Noise Abatement Criteria, 23CFR772

Activity Category	Leq(h), dBA*	Description of Activity Category
A	55 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	65 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.

C	70 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	50 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

* Hourly A-Weighted Sound Level in Decibels, Reflecting a 2 dBA AApproach@ Value Below 23CFR772 Values

b. The design noise level is greater than or equal to an increase of 10 dBA over the existing noise level. This impact criterion takes effect regardless of the existing noise levels. Existing noise levels are defined as the noise levels (present conditions) at a receiver prior to the addition of the travel lanes or new construction on the adjacent transportation facility.

A 10 dBA increase is perceived by most people as a doubling of noise loudness. (See Table 2)

Table 2: SOUND LEVEL CHANGE vs LOUDNESS

Sound Level Change	Relative Loudness
1 dBA	No perceptible change
3 dBA	Barely perceptible change
5 dBA	Readily perceptible change
10 dBA increase	Perceived as twice as loud

C. Noise Abatement Criteria

The noise analysis will identify traffic noise impacts, which will then be considered for noise mitigation. The overall goal of mitigation is to obtain a substantial noise reduction, which may or may not result in noise levels below the NAC levels. The two relevant criteria to consider when identifying and evaluating noise abatement measures to be incorporated in a project are feasibility and

reasonableness. Noise mitigation will be provided if it is determined to be both feasible and reasonable.

Feasibility deals primarily with constructability and engineering considerations (e.g., Can a substantial noise reduction be achieved given the conditions of a specific location? Is the ability to achieve noise reduction limited by factors such as topography, access requirements for driveways or ramps, the presence of local cross streets, or other noise sources in the area?) A proposed noise barrier that will not achieve a minimum of 5 decibels of attenuation (positive noise reduction) for a simple majority of front-row (adjacent) receivers, under future conditions with the proposed project at the specific locale, is not considered feasible. In addition, preliminary and final design consideration should be given to the elements of safety and maintenance, and should be consistent with general AASHTO design principles.

Reasonableness is a more subjective criterion than feasibility. It implies that common sense and good judgement were applied in arriving at a decision. (e.g., Does the proposed noise abatement measure satisfy the cost criterion established under this policy?)

Some of the factors considered when determining **feasibility** and **reasonableness** of noise abatement include, but are not limited to, the following:

1. **Noise Abatement Benefits** - Every reasonable effort should be made to obtain substantial noise reductions. UDOT defines a substantial reduction when noise levels are reduced at the front row receivers by at least 10 dBA. **In any case, no barrier shall be deemed feasible if an absolute minimum reduction of 5dBA cannot be achieved for the majority of the front-row (adjacent) receivers.** It is not considered to be a prudent investment of public funds to construct a noise barrier that will not result in at least a readily perceptible noise reduction.

   In determining and abating traffic noise impacts, primary consideration will be exterior areas surrounding residential areas or areas of frequent human use that are adjacent to individual properties. For residential areas, the consideration point will be the outside area that is immediately facing the transportation facility, which in most cases will either be the front or back yard. This also applies to special-use and non-residential areas, such as a park playground area or an outdoor restaurant seating area.

   Primary consideration will be given only for interior areas where outside human activity is minimal, such as hospitals and churches.

   Land Use and Zoning - The current zoning of the land adjacent to the transportation facility project will be reviewed during the

mitigation consideration process. Noise barriers are usually not consistent with commercial or industrial zoning (Land use Category C) as businesses usually rely on visual exposure from the roadway to attract customers. However, the noise analyses and consideration of abatement will apply to all activities in Land Use Categories A, B and C.

Engineering, Safety and Maintenance - As is the case with any structure, there are engineering, safety and maintenance issues that must be considered to determine its constructability. If any of these issues are substantial enough to preclude good safety and maintenance practices, then the barrier may be deemed not feasible. An example of this condition would be the reduction of sight distance below minimum safety standards as a result of the construction of the sound barrier.

4. **Cost of Abatement** - Residential Areas (Category B, Table 1):
For residential areas, all benefitted receivers must be considered in determining a noise barrier=s cost per receiver regardless of whether or not they were identified as impacted. A benefitted receiver is any impacted or non-impacted receiver that gets a noise reduction of 5 dBA or more as a result of the noise barrier. The maximum cost used to determine reasonableness to provide noise abatement will be $25,000 per benefitted receiver. This cost will be periodically reviewed by the Department for reasonableness and updating, as needed.

In the event that the noise barrier cost is greater than $25,000 per receiver, the cost will be considered to be reasonable only if it can be demonstrated that a Asevere@ noise impact will occur. Severe traffic noise impacts are defined as traffic noise impacts which are projected to increase existing receiver noise levels by 30 dBA or more, or results in absolute exterior noise levels of 80 dBA or greater. Based on severity, abatement will be considered on a case-by-case basis.

Non-Residential Areas (Category A, B or C, Table 1):
The cost of noise abatement measures for schools, parks, churches and other non-residential developments including commercial and industrial areas will depend on height of noise wall required and corresponding length of frontage this type of development has exposed to the transportation facility. In any case, a reasonable cost for mitigation for noise abatement will not exceed $200 per linear foot of wall (for a 10-foot high wall) installed. This cost will be periodically reviewed by the Department for reasonableness and updating, as needed.

5. **Public Involvement/Balloting** - The UDOT Region Project Manager (PM), the Region Public Involvement Coordinator (PIC) and the Region Environmental Engineer/Manager will decide on the appropriate level of public involvement activities. The purpose of the public involvement will be to make sure that the concerns of the affected communities are known to the Department and that every effort to provide noise abatement to an impacted community is taken. Actions to involve the public may include:

   X Special open houses
   X Mailers
   X Workshops

   UDOT will contact the local municipality and impacted residents/landowners to initiate the public involvement process. A public informational meeting may be held as part of this process.

   In determining the desire for noise abatement from the affected residents/communities, a reasonable effort will be made to send ballots to the correct address of the current owner of record that is determined to be impacted by noise as defined in this policy. In this case, a reasonable effort to obtain the current property owner of record including his/her current mailing address will consist of obtaining ownership records from the appropriate county Recorder=s Office. Those that are eligible to ballot will be contacted with an explanation of the process. Prior to balloting, a reasonable effort will be made by telephone, mailer, or in person to explain the process and to determine any special needs of the residents in casting a ballot. One ballot will be sent by regular mail to each resident/land owner of record and each will be given a deadline as to when the ballots need to be returned for counting. If all ballots sent to the Afront-row@ (adjacent) receivers are not returned by the deadline, a second ballot will be sent to these residents/landowners since they will receive the greatest impact of the mitigation or lack thereof. Ballots sent by regular mail is deemed by the Department as Adue diligence@ in notifying the affected residents of possible noise mitigation measures in their area. Only in unusual circumstances will ballots be sent by registered mail and/or door-to-door soliciting of ballots be done. This determination will be made by the Project Manager, the Region PIC and the Region Environmental Engineer/Manager with consultation of the UDOT Environmental Director. Ballots not returned by the deadline(s) will be considered Anon-responsive and indifferent@ and will be documented as such.

   Noise abatement will only be considered if the combination of 75% of the Aimpacted front row (adjacent) receivers@ and 67% overall (including front row receivers) of the Aimpacted residents/land owners@ who receive

a minimum of 5 dBA reduction, vote, through balloting, in favor of the abatement. The denominator used to calculate these percentages will be determined by the total number of ballots sent out (this number should reflect the total number of impacted receivers in each category) and not the total number of ballots returned. The balloting will be conducted **prior to** the final environmental document approval. Non-responsive ballots will be counted just as that, non-responsive, with a note that they were neither for nor against the mitigation efforts.

If the project is phased for funding and construction over several years and specifically beyond 5 years from the initial environmental document approval, then an evaluation will be completed and documented to determine whether there have been significant changes in property ownership of the impacted receivers since the initial balloting was completed. If significant changes in ownership have taken place, re-balloting of the impacted receivers during the initial phases of design for each phase of the project will be required. Significant changes in property ownership is defined as 25% or more for the purposes of re-balloting.

The procedure to determine those in favor of the noise abatement will be as follows:

a. The total number of Aimpacted receivers (residents/landowners)@ will be determined.

b. The total number of Afront row (adjacent) receivers@ will be determined.

c. To determine the percentage in favor of the abatement for categories Aa@ and Ab@ above, the total number in category Aa@will be multiplied by 0.67 and the total number in category Ab@ will be multiplied by 0.75 prior to sending out the ballots. When the ballots are returned, ballot results will be placed in the project file.

d. The noise ballots will be a standard form (the standard form is posted on UDOT=s web site) that includes, at a minimum, the UDOT official logo, the project name, the project sponsor, the consultant=s name, project number, a brief explanation of the purpose of the balloting including the approximate height, length and alignment (location) of the barriers, boxes to indicate a preference for, against, or no preference to the abatement and will include a place for comments. The ballot will also include the deadline for votes to **be received** by the Department or consultant in order to be counted. A self addressed stamped envelope will be enclosed for return of the ballot.

e. Only the owner of record of the residence/property determined to be an impacted receiver under this policy will be allowed to cast a ballot. This is further defined as each permanent single family residence and/or mobile home owner would get one vote from the owner of the residence as long as they also owned the land the residence is on, each apartment building would get one vote from the owner of the building/property regardless of how many units were in the complex, each mobile home park land owner would get one vote if the residents are renting spaces for their mobile homes. In the case of condominium/townhome developments, the owner of each condominium/townhome would get one vote. In the case of a retirement home, the owner of the home would get one vote for his property as a whole regardless of how many residents he had within his building. As for commercial and/or industrial developments, the owner of the land would get one vote for each individual parcel impacted regardless of the size or market value of the property. If front-row receivers consist of a mix of residential/commercial properties, the ballots of front-row receivers will be weighted based on the percentage of their property frontage to the total frontage along the transportation corridor being considered for a noise wall.

If the impacted residents/property owners vote to reject construction of a noise abatement device, their area <u>will not be reconsidered</u> for future noise abatement unless a future transportation project falls under the guidelines of a Type I Project for noise abatement. **This point should be emphasized at public meetings and highlighted in mailers.**

UDOT will consider written documentation from local governments and/or community councils of their noise wall/abatement desires and/or local building ordinances prior to making a decision on noise abatement within their area of jurisdiction. This documentation will be only one of the factors, but not the sole factor, taken into account in determining whether noise mitigation is considered for a particular area of impacted receivers. Early communication with the local government agency to discuss their building ordinances for noise mitigation is encouraged to access and mitigate any conflicts which may arise over noise abatement construction.

6. **Abatement Design** - A noise abatement device must be designed in accordance with the following: (1) good design practice, (2) optimal performance, and (3) current highway safety technology. Aesthetics treatment, graffiti deterrence and landscaping will be considered where appropriate in consideration of design standard specifications, cost efficiency, maintenance, and local municipality regulations. Refer to Section E.1. if these features are desired by the public and costs exceed the abatement limit of section C.4.

7. **Noise Receptor Location -** Noise receptor locations are normally restricted to exterior areas of frequent human use (interior locations are only used when there are no outside activities, such as in churches, hospitals, libraries, etc.). Typically, one of three locations is considered standard practice for locating exterior noise receptors: (1) at or near the highway right-of-way line; (2) at or near a building in residential or commercial areas; and (3) at an area between the right-of-way line and a building where frequent human activity occurs, such as a patio, pool, or play area in the yard of a home (the selection of the area of frequent human activity is made by the noise analyst). Any of these locations are acceptable, as long as the Region Environmental Engineer/Manager and the consultant chooses the location of the receptor and applies it uniformly and consistently in all the analyses that are done on the project.

Once the construction of a noise barrier has been determined feasible, then the Department will determine whether its construction is reasonable by thoroughly considering the wide range of criteria described above. The UDOT Noise Abatement Measure Recommendation Checklist (See Checklist in the Appendix) will be completed and a decision of reasonableness documented in the project file. Noise barriers will only be constructed by the Department if they have been determined reasonable. The decision to recommend or not recommend a noise barrier be installed will normally be the responsibility of the Region Environmental Engineer/Manager. Concurrence will be made by the Project Manager, the Region Pre-Construction Engineer and the UDOT Environmental Director. Final approval for projects with federal involvement will be made by FHWA.

D. **Miscellaneous Noise Abatement Measures**

1. If a noise impact is identified, the following additional abatement measures may be considered:

   a. Traffic Management Measures (e.g. signing for the restriction of compression brakes).

   b. Alteration of horizontal and vertical alignments.

   c. Noise barriers will be constructed when feasible and reasonable within UDOT right of way. UDOT will own and maintain the barrier.

   d. In accordance with 23 CFR 772.13(c)(6), noise insulation of public use or nonprofit institutional structures will be considered as a

noise abatement measure when determined reasonable and feasible.

e. Instances may arise in which Department right of way is not the most prudent location for noise barriers, yet noise abatement can be feasible and reasonable if built on adjacent property (or adjacent public right of way). In these cases:

1. The Department's cost is limited to normal cost for abatement on Department right-of-way.

2. Adjacent property owners allow access and easements as necessary in order to construct and maintain the barrier.

3. Maintenance of noise walls and associated landscaping on the side facing the highway will normally be the Department's responsibility if determined to be feasible and reasonable. The opposite face shall be maintained by UDOT as well, unless maintenance responsibilities are assigned to other parties.

E. Local Municipality Cost Participation

In instances where abatement costs exceed the abatement limit, the local municipality may be offered the option to incur the additional cost of abatement. In order for the Department to participate in noise abatement when costs exceed abatement limits, an agreement between the local municipality and the Department must include the following:

a. The Department's actual cost for noise abatement will not exceed the abatement limits as specified in section C.4.

b. The participating local municipality shall pay the Department an amount equal to the estimated cost of the abatement measure and appurtenances that exceed the abatement limit. Payment of an estimated cost shall be made to the Department before construction begins. Any variance between the estimated and actual cost will be settled at the completion of the project.

c. The agreement will be signed before design begins.

d. The participating local municipality=s final cost shall be based on actual construction costs.

F. Projects Funded from Other Sources

The Department may construct and maintain noise abatement measures along state highway right-of-way in cases where the cost for the noise abatement is provided by citizens, adjacent property owners, developers, or local municipalities; and meeting other established criteria. The Department will design, build, and maintain the abatement measure, and the local municipality acting for and in behalf of other groups will pay the department for all preliminary engineering, construction and maintenance costs.

G. Traffic Noise Prediction

Unless agreed upon in advance by UDOT and FHWA, only the current FHWA approved traffic noise prediction model (currently, TNM 2.1) is approved for use in any traffic noise analysis.

Extenuating Circumstances

There may be extenuating circumstances where unique or unusual conditions warrant special consideration of highway traffic noise impacts and/or implementation of noise abatement measures. These circumstances could involve areas such as (1) those that are extremely noise-sensitive, (2) those where severe traffic noise impacts are anticipated, or (3) those containing Section 4(f) resources. Extenuating circumstances will be considered on an individual project basis.

Definitions

1. **Approach Criteria -** For the purpose of this document, the approach criteria is defined as within 2 decibels (dBA) of the appropriate Federal Highway Administration (FHWA) noise abatement criteria.

2. **Benefitted Receiver -** A benefitted receiver is a noise sensitive receiver that is predicted to receive a minimum of 5 dBA of noise reduction as a result of noise abatement. Only benefitted receivers will be included in determination that any particular noise abatement procedure has a reasonable cost.

   Date of Public Knowledge - The date the final environmental document (Environmental Study, Categorical Exclusion, Finding of No Significant Impact, or Record of Decision) is approved.

4. **Decibel -** A descriptor of the difference between sound pressure levels. For traffic noise purposes the A-weighted scale closely approximates the range of frequencies a human ear can hear. The A-weighted decibel is abbreviated dBA.

5. **Design Noise Level** - The noise level calculated for the worst hourly traffic noise conditions likely to occur on a regular basis during the design year.

6. **Design Year** - The year for which the highway is designed and traffic volumes are computed. The design year is typically ten to thirty years after the time of construction.

7. **Existing Noise Levels** - Noise resulting from the natural and mechanical sources and human activity considered to be usually present in the particular area.

8. **Front-Row Receiver -** A noise sensitive receiver (resident) that is located adjacent to or Anearest@ to the transportation facility.

9. **Highway** -Public way for purposes of vehicular travel, including the entire area within the right-of-way.

10. **Impacted Receiver** - A noise sensitive receiver that is or will be subjected to highway traffic noise that equals or exceeds the noise abatement criteria or exceeds existing noise levels by 10 or more decibels (dBA).

11. **Landowner -** The current owner of record at the appropriate county Recorder=s Office.

12. **Leq** - Equivalent (average) noise level, in units of decibel (dBA).

13. **Leq(h) -** The hourly value of Leq.

14. **Municipality** - A Local City, Town, County etc. having its own incorporated government for local affairs.

15. **Noise Sensitive Receiver -** Any property (owner occupied, rented, or leased) where frequent exterior human use occurs and where a lowered noise level would be of benefit. In those situations where there are no exterior activities to be affected by the traffic noise, the interior of the building will be used to identify a noise sensitive receiver.

16. **Planned, Designed, and Programmed -** The term used in this policy when the developer of a proposed development has been issued a formal building permit by the local agency of authority.

17. **Receiver** - Recipients of highway generated noise on a property supporting activity categories A, B or C in Table I.

18. **Sensitive Land Uses** - Residential dwelling units, commercial/industrial sites, or other fixed, developed sites conforming to activity category A, B or C in Table 1.

19. **Severe Traffic Noise Impact -** A traffic noise impact which increases residential noise levels by 30 dBA or more over existing noise levels, or results in absolute noise levels of 80 dBA or more.

20. **STIP -** State Wide Transportation Improvement Program. This is the annually updated list of projects advancing through design to construction.

21. **TNM** - FHWA Traffic Noise Model computer program (Version 2.1 or applicable revisions) used for highway traffic noise prediction and analysis.

22. **Type I Project** - A project in conjunction with new highway construction or existing highway construction which significantly alters the horizontal or vertical alignment or increases the number of through-traffic lanes.

23. **Type II Project -** A project commonly referred to as a Aretrofit@ project to provide noise abatement along an existing highway. This type of noise abatement project is no longer performed by UDOT.

24. **UDOT Noise Abatement Criteria (NAC) -** The noise decibel (dBA) value reflecting the approach criteria of 2 decibels (dBA) below the NAC values listed in 23CFR772 for each land use category.

Procedures

Noise Abatement UDOT 08A2-1.1

Responsibility: Region Environmental Engineer/Manager

Actions

1. Determine if this is a Type-I project. If it is not a Type-I project, so disclose in the environmental document, ending the process with this step. However, consideration for noise abatement will be given in the extremely rare instance in which the project itself is expected to create a noise impact (e.g., sideslopes are flattened as part of a project to improve an intersection and the traffic noise levels increase to equal or exceed the UDOT NAC and result in at least a 3dBA increase).

2. Determine types and numbers of sensitive land use activities (receptors) that might be impacted . If none, so disclose in the environmental document, ending the process with this step.

3. Measure or calculate existing noise levels.

4. Calculate design noise levels. Develop design noise contours. Compare design noise abatement criterion levels and existing noise levels. Identify impacted receptors. If no impacts, summarize findings for the environmental document, ending the process with this step.

5. Consider general abatement strategies, consistent with Department policy, for all impacted receptors and for each alternative, including No Action.

6. Prepare Preliminary Noise Analysis and direct its review.

7. Prepare environmental document, and include summary of the Preliminary Noise Analysis.

Responsibility: Project Manager

8. Direct the local municipality involvement process, providing information where noise abatement is likely and where it is not likely. Also discuss any possible right-of-way impacts with the UDOT Right-Of-Way Director. If the Preliminary

Noise Analysis shows that there are no noise impacts or that all impacts are unmitigatable, the process ends with this step.

Responsibility: Project Manager and Region Public Involvement Coordinator

9. Conduct public involvement process

Responsibility: Region Environmental Engineer/Manager

10. Prepare a detailed Noise Study Report after identification of the preferred alternative and approval of the final environmental document.

11. Submit Noise Study Report to Region Preconstruction Engineer and Central Environmental Services for approval.

Responsibility: Region Preconstruction Engineer and UDOT Environmental Director

12. Review and approve Noise Study Report.

Responsibility: Project Manager

13. Incorporate the Noise Study Report into Design Study Report, and submit to the Region Preconstruction Engineer for approval.

14. Incorporate approved abatement measures into design plans and specifications.

APPENDIX

UTAH DEPARTMENT OF TRANSPORTATION
NOISE ABATEMENT RECOMMENDATION CHECKLIST

Project Name:
Project No.:
Preparer:
Receiver Name/Description:

Feasibility and Reasonableness Determination

1. Does the design noise level equal or exceed the UDOT Noise Abatement Criteria as defined in Table 1 of this Policy?
Yes_____ No_____

If yes, proceed to Question #3. If no, proceed to Question #2.

2. Does the receiver, as a result of the design noise level, substantially exceed (10 or more dBA) the existing noise levels prior to construction?
Yes_____ No_____

If yes, proceed to Question #3. If no, then noise abatement is not recommended. Proceed to decision segment of form.

3. Can effective noise barriers be constructed which provide a minimum reduction of 5 dBA for a majority of front-row receivers?
Yes_____ No_____

If yes, proceed to Question #4. If no, abatement measures are not feasible and are not recommended at this site. Proceed to decision segment of form.

4. Are there undeveloped lands along the project corridor?
Yes_____ No_____

If yes, proceed to Question #5. If no, skip Question #5 and proceed to Question #6.

5. Were the undeveloped lands Aplanned, designed, and programmed@ for development under Land Use Categories A, B or C prior to the date the final environmental decision document was approved as defined in this policy?
Yes_____ No_____

If yes, proceed to Question #6. If no, implementation of abatement is not reasonable. Noise abatement is the responsibility of the land owner/developer. Proceed to decision segment of form.

6. Can noise barriers be constructed without creating a safety hazard to users and residents, and not interfere with operations and maintenance of the highway facility?
Yes_____ No_____

If yes, proceed to Question #7. If no, abatement measures are not recommended at this site. Proceed to decision segment of form.

7. Does the cost per benefitted residence exceed $25,000 for residential areas in Land Use Category B or exceed $200 per linear foot for non-residential areas in Land Use Category A and/or B or commercial and/or industrial zoned areas in Land Use Category C?
Yes_____ No_____

If no, proceed to Question #8. If yes, does this receiver have a Asevere noise impact@ (the design noise levels increase the existing noise levels by 30 dBA or more and/or the noise levels are 80 dBA or greater)?
Yes_____ No_____

If yes, proceed to Question #8. If no, noise abatement measures are not considered reasonable. Proceed to decision segment of form.

Questions #8 and #9 are related to all receivers where a potential wall is being considered.

8. Does the Public Involvement balloting result in a 75% majority of front row impacted receivers and 67% majority of the overall (including front row) impacted receivers voting in Afavor@ of the proposed noise abatement measure?
Yes_____ No_____

If no, noise abatement measures are not considered reasonable. Proceed to decision segment of form. If yes, proceed to Question #9.

9. Are there any Environmental Impacts which need special attention as a result of the implementation of the noise abatement?
Yes_____ No_____

If yes, outline these impacts and discuss with the Environmental Engineer or Manager in the Region.

Decision

Are Abatement Measures feasible? Yes_____ No_____

Are Abatement Measures reasonable? Yes_____ No_____

APPENDIX C

Figures
Noise Receptors and Existing and Proposed Noise Walls

Appendix H-1a.
No Build Noise Contours

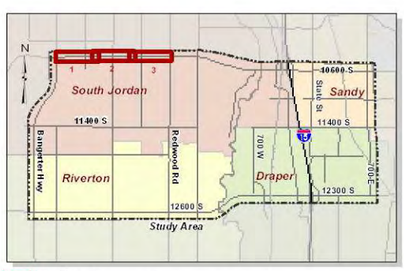
10400 South: Bangerter Highway to Redwood Road

No Build Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor

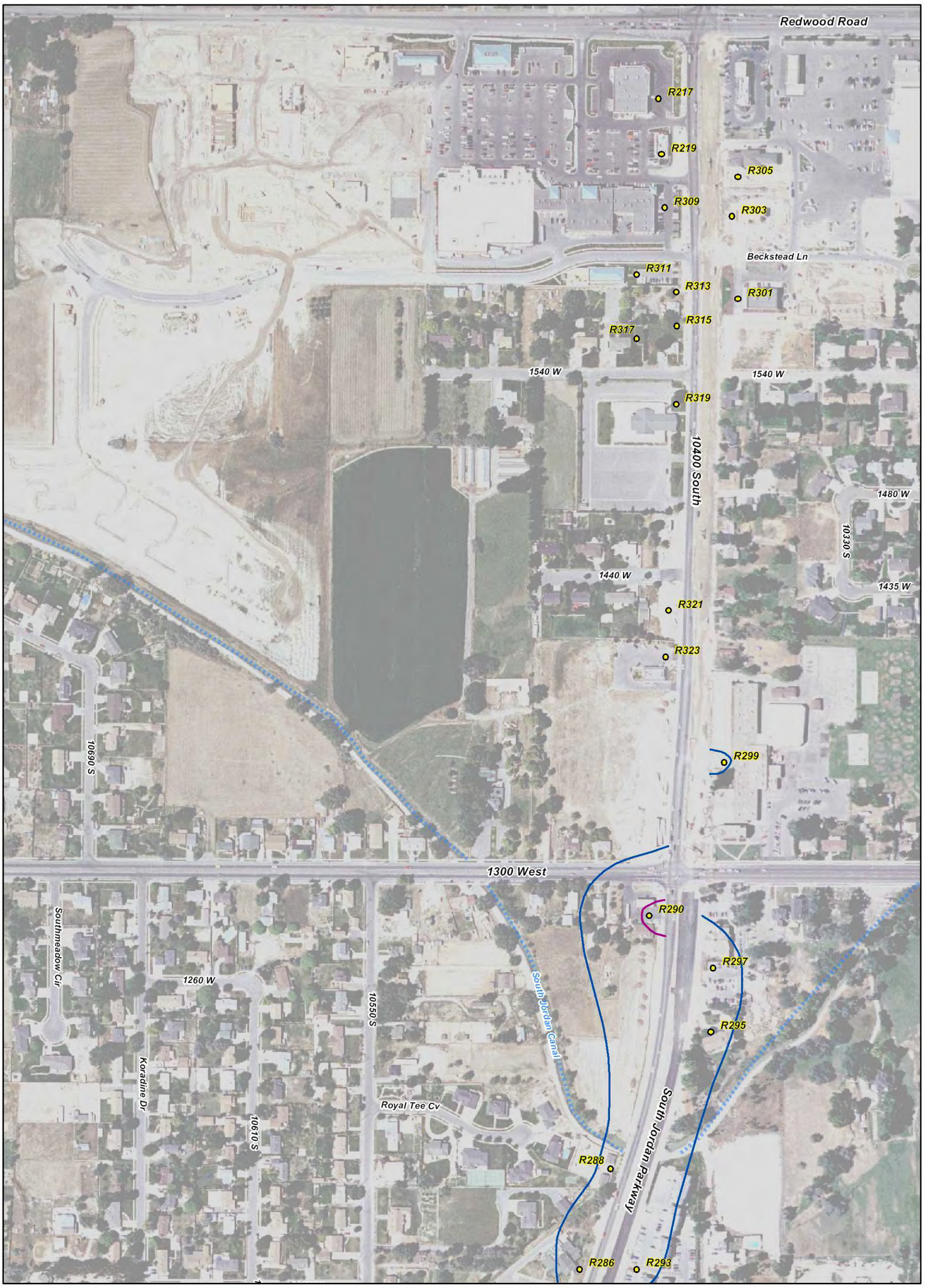
Water Course

300 0 300 600 Feet



October 2004

11400 SOUTH



Appendix H-1b.
No Build Noise Contours

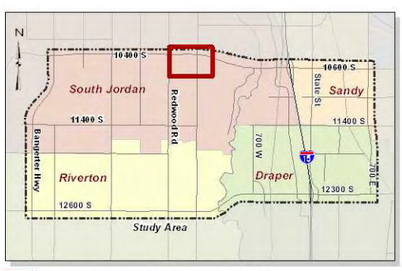
10400 South: Redwood Road to 1300 West

No Build Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor

Water Course

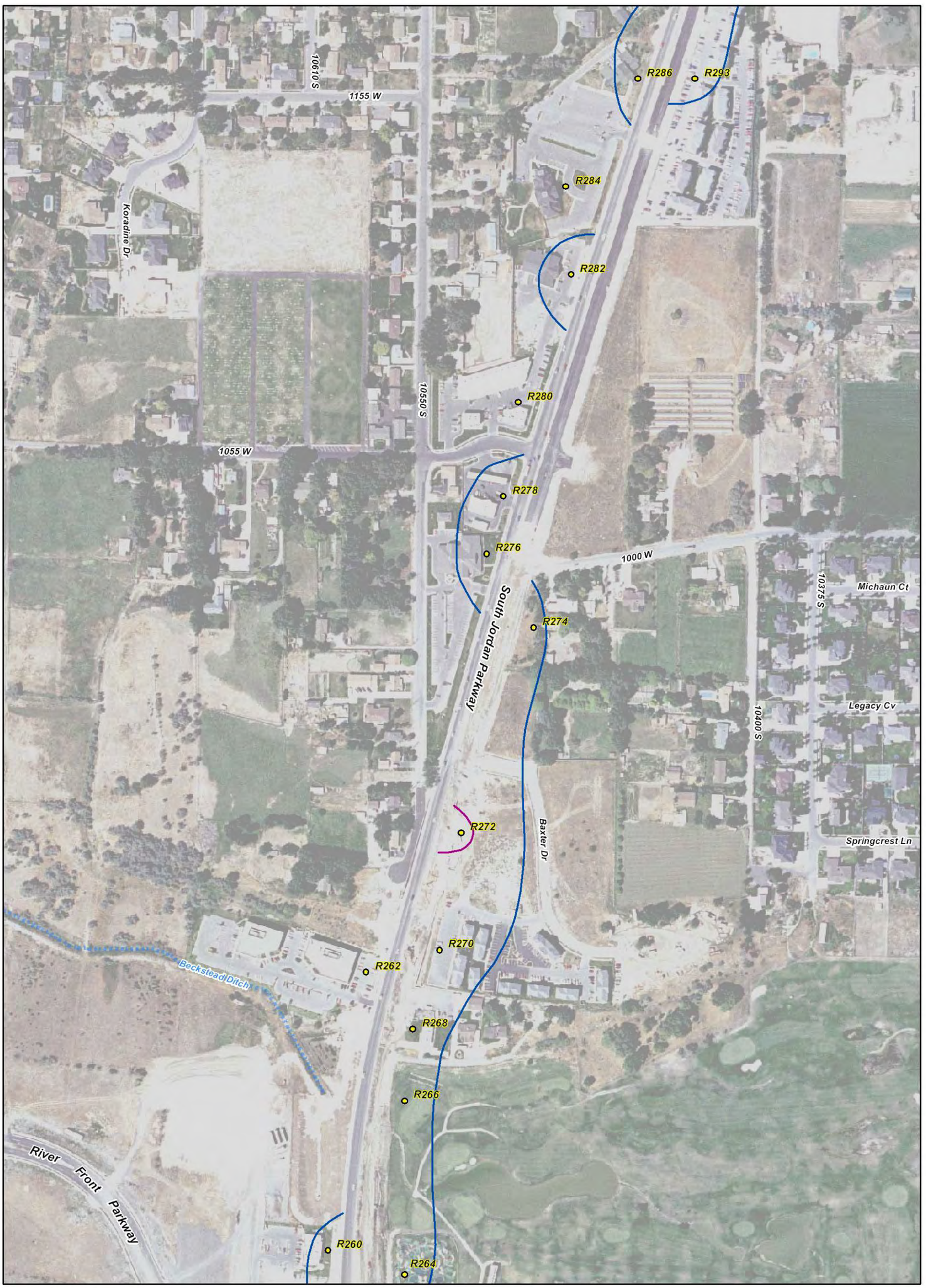
300 0 300 600 Feet



Panel Extents

October 2004

11400 SOUTH

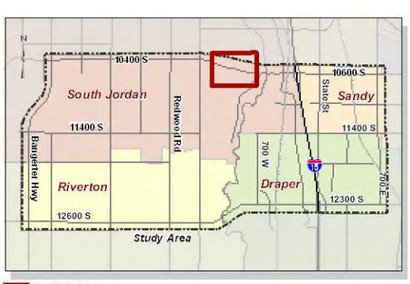


No Build Noise Levels

- 65 dBA
- 70 dBA

- Noise Receptor
- Water Course
- Alternative Right-of-Way Line

300 0 300 600 Feet

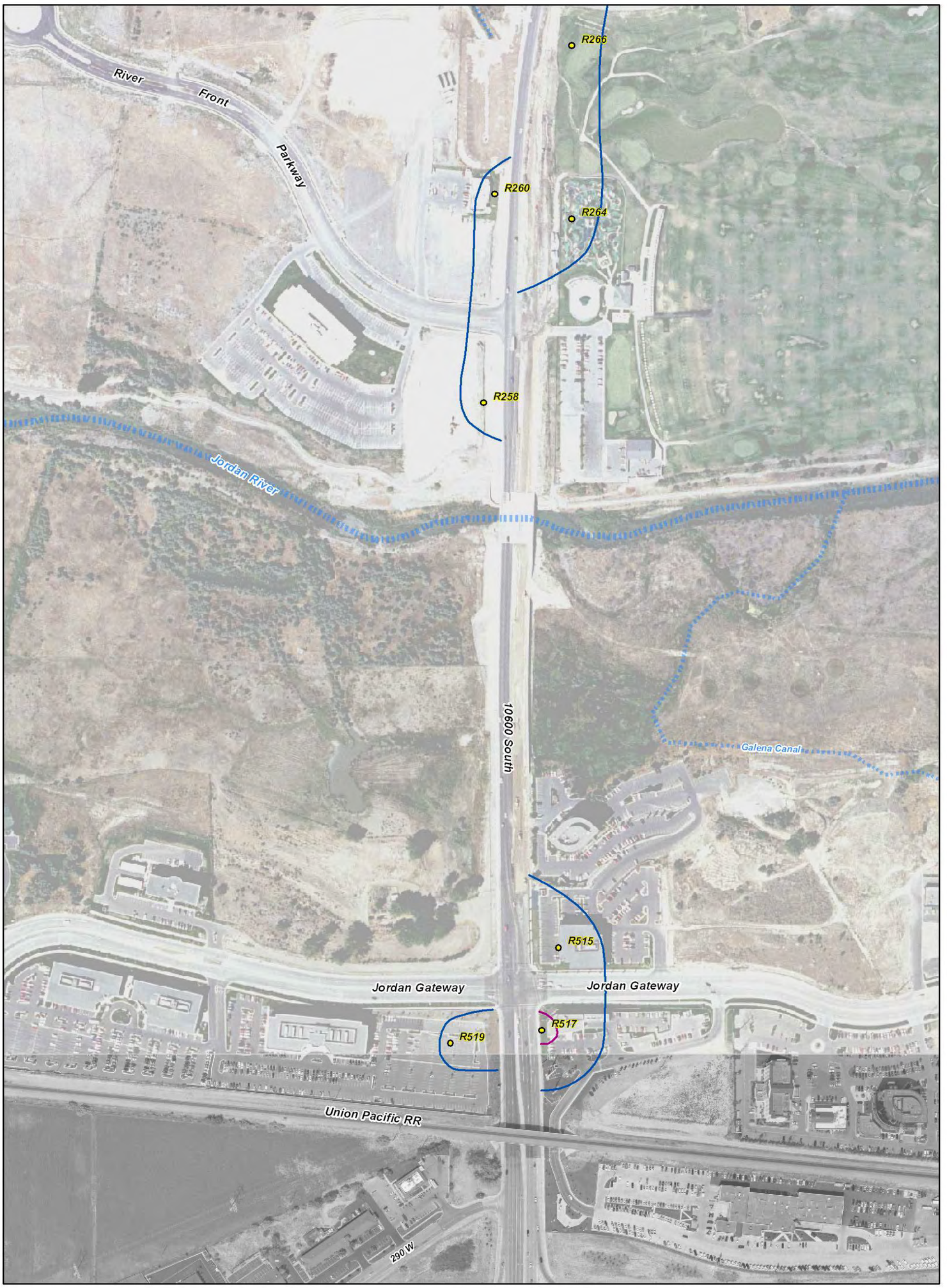


October 2004

Appendix H-1c.
No Build Noise Contours

10400 South: 1300 West
to River Front Parkway

11400 SOUTH



No Build Noise Levels

- 65 dBA
- 70 dBA

- Noise Receptor
- Water Course

300 0 300 600 Feet

Panel Extents

October 2004

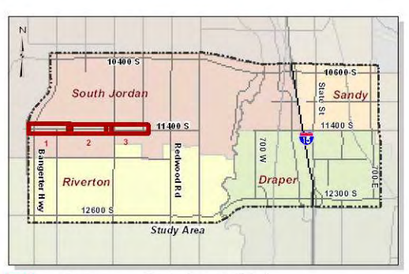
Appendix H-1d.
No Build Noise Contours

10400 South: River Front Parkway to Jordan Gateway

11400 SOUTH

No Build Noise Levels
65 dBA
70 dBA
Noise Receptor
Water Course

300 0 300 600 Feet

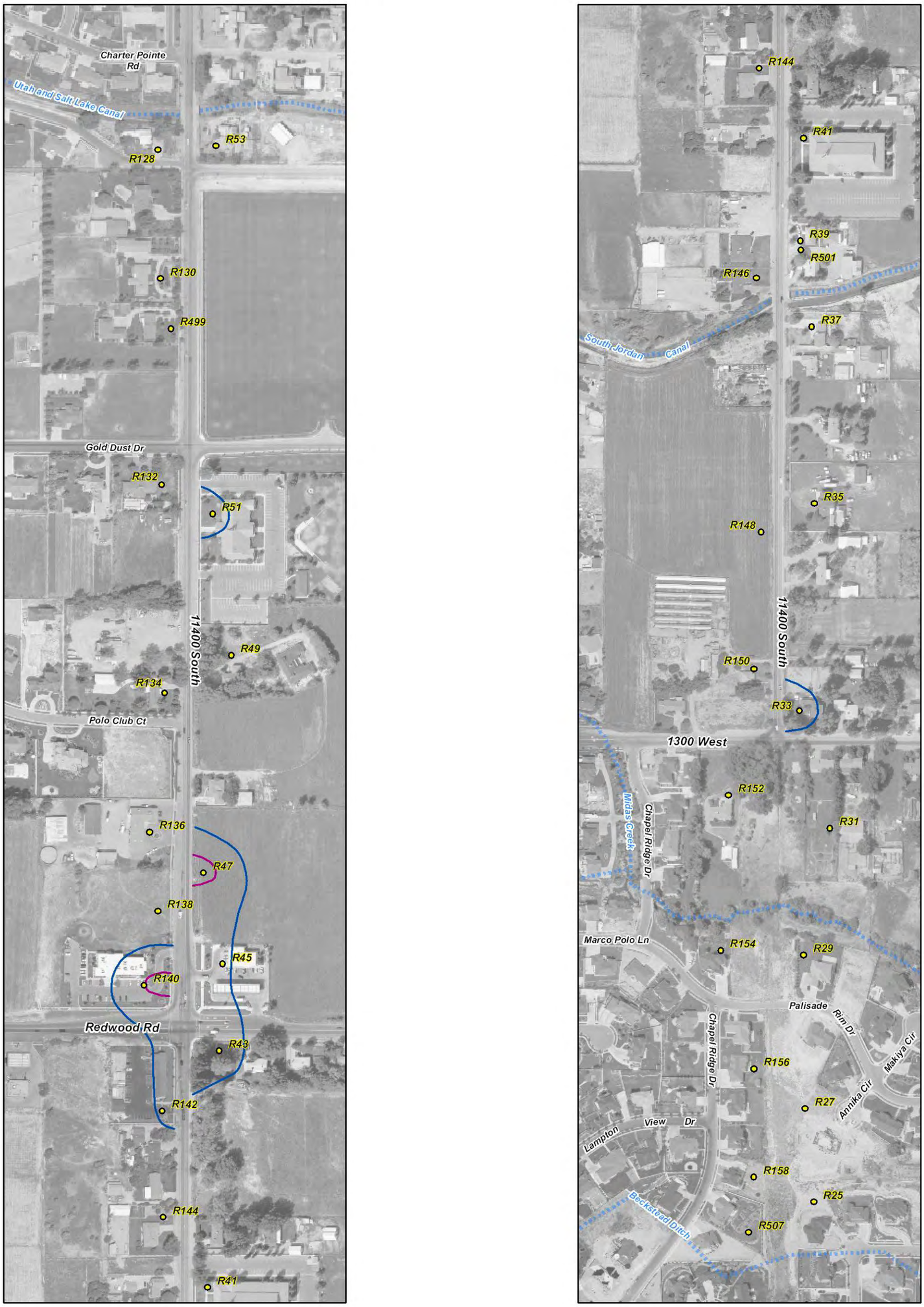


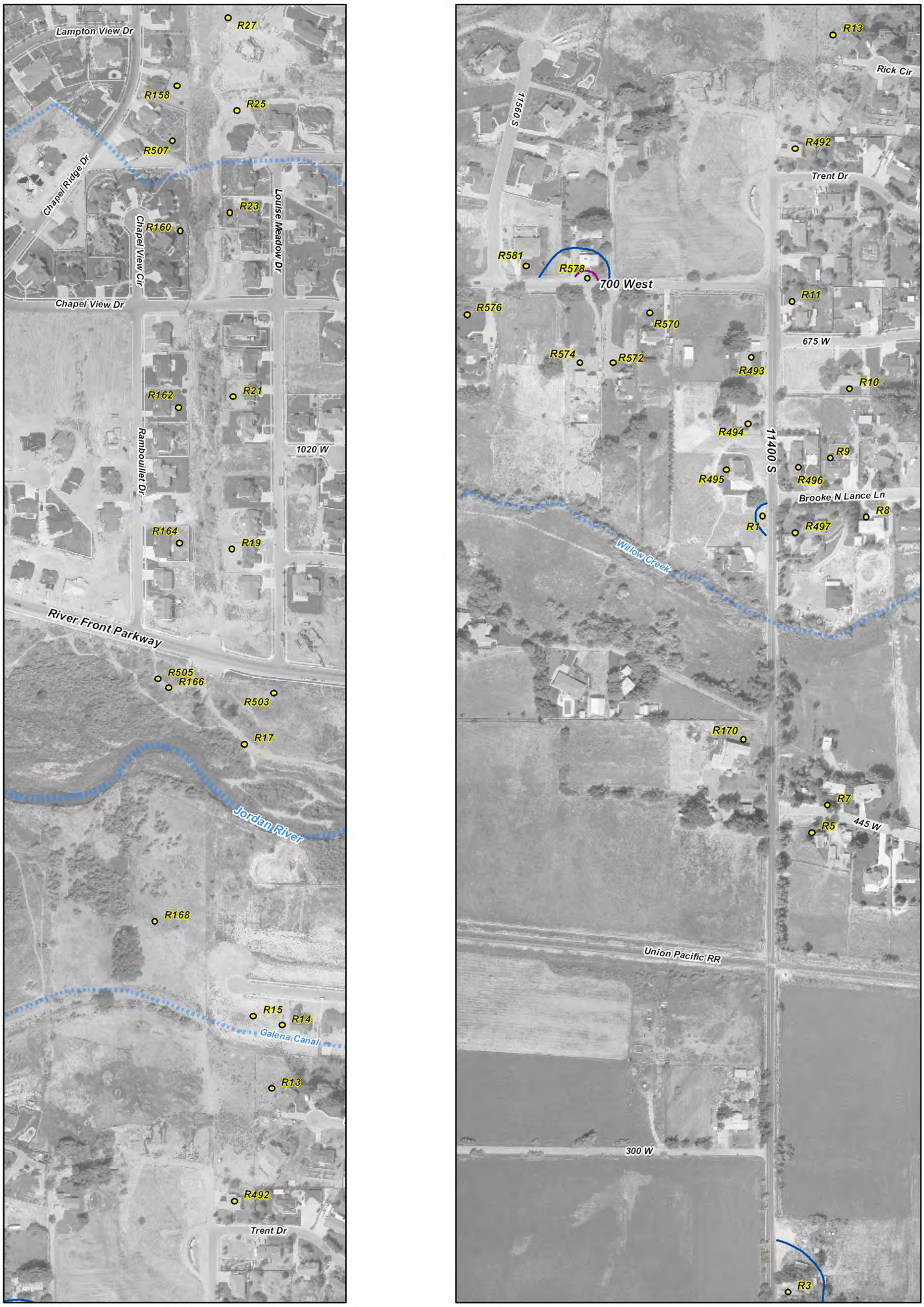
October 2004

Appendix H-1e.
No Build Noise Contours

11400 South: Bangerter Highway to 2200 West

11400 SOUTH


Panel 1
Panel 2
Charter Pointe Rd
Utah and Salt Lake Canal
R53
R128
R130
R499
Gold Dust Dr
R132
R51
11400 South
R49
R134
Polo Club Ct
R136
R47
R138
R45
R140
Redwood Rd
R43
R142
R144
R41
R144
R41
R39
R501
R146
R37
South Jordan Canal
R35
R148
11400 South
R150
R33
1300 West
R152
Midas Creek
Chapel Ridge Dr
R31
Marco Polo Ln
R154
R29
Palisade
Rim Dr
Chapel Ridge Dr
Makiya Cir
R156
R27
Annika Cir
Lampton
View
Dr
R158
R25
Beckstead Ditch
R507
No Build Noise Levels
65 dBA
70 dBA
Noise Receptor
Water Course
300
0
300
600
Feet
South Jordan
Sandy
Riverton
Draper
Bangerter Hwy
Redwood Rd
Study Area
Panel Extents
October 2004
Appendix H-lf.
No Build Noise Contours
11400 South: 2200 West
to Beckstead Ditch
11400 SOUTH



No Build Noise Levels
65 dBA
70 dBA
Noise Receptor
Water Course

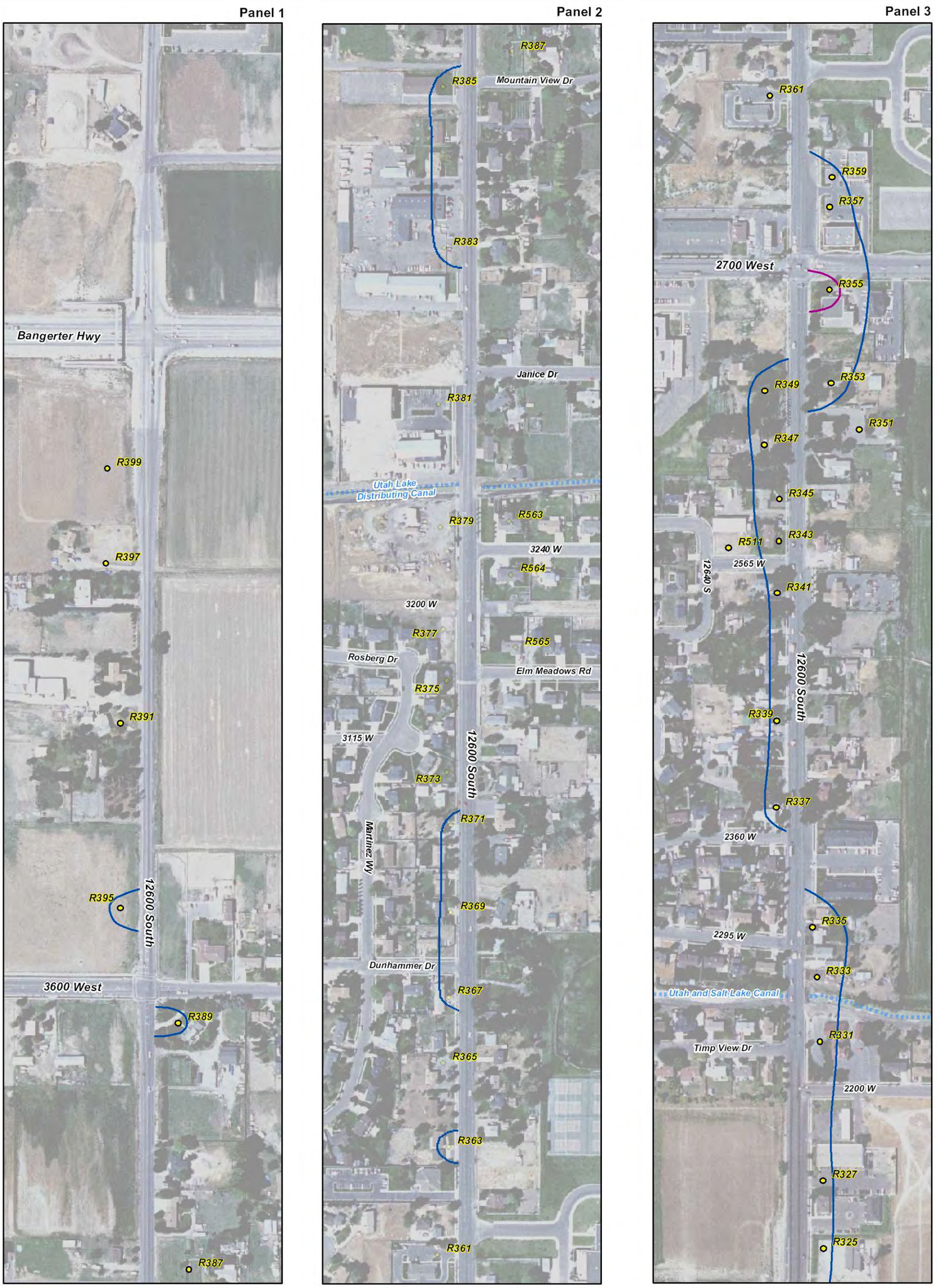
300 0 300 600 Feet

October 2004

Appendix H-1g.
No Build Noise Contours

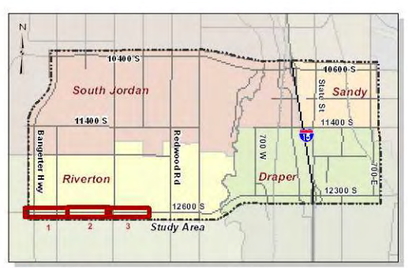
11400 South: Beckstead Ditch to 300 West

11400 SOUTH



No Build Noise Levels
65 dBA
70 dBA
Noise Receptor
Water Course

300 0 300 600 Feet



Panel Extents

October 2004

Appendix H-1h.
No Build Noise Contours

12600 South: Bangerter Highway to 2200 West

11400 SOUTH

Appendix H-1i.
No Build Noise Contours

12600 South: 2200 West
to Jordan River

11400 SOUTH

No Build Noise Levels
65 dBA
70 dBA
Noise Receptor
Water Course

300 0 300 600 Feet

Panel Extents

October 2004

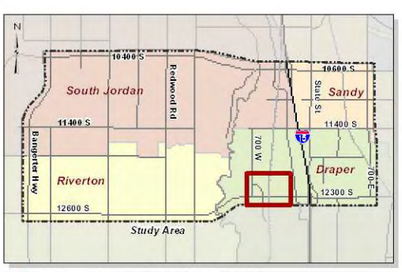
Appendix H-1j.
No Build Noise Contours

12300 South: Jordan River to 700 West

11400 SOUTH

No Build Noise Levels
65 dBA
70 dBA
Noise Receptor
Water Course

300 0 300 600 Feet



October 2004

Appendix H-1k.
No Build Noise Contours
12300 South: 700 West
to 265 West

11400 SOUTH

Appendix H-11.
No Build Noise Contours

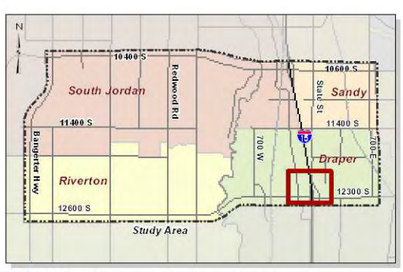
12300 South/State Street: 265 West to State Street

No Build Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor

Water Course

300 0 300 600 Feet



Panel Extents

October 2004

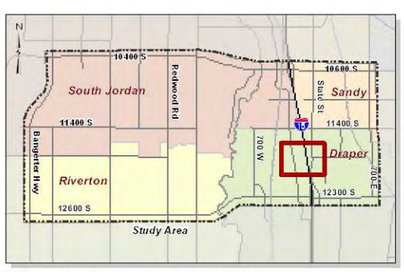
11400 SOUTH

No Build Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor

Water Course

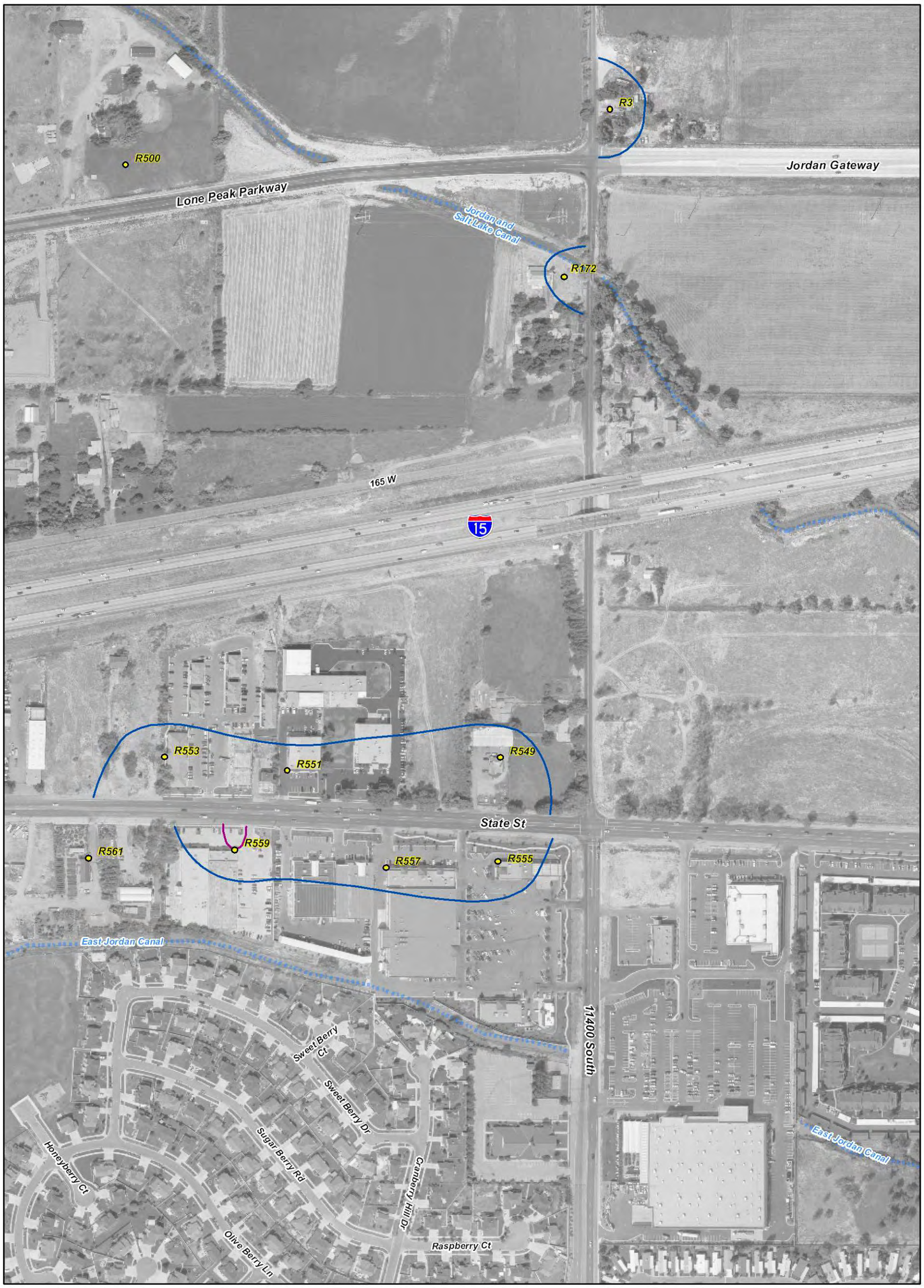
300 0 300 600 Feet



October 2004

Appendix H-1m.
No Build Noise Contours
State Street and 11800 South Overpass

11400 SOUTH

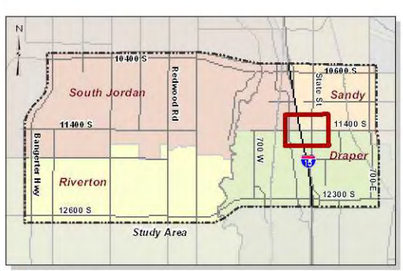


Appendix H-1n.
No Build Noise Contours

State Street: 11400 South Area

No Build Noise Levels
65 dBA
70 dBA
Noise Receptor
Water Course

300 0 300 600 Feet



Panel Extents

October 2004

11400 SOUTH

Appendix H-1o.
No Build Noise Contours
11000 South Underpass

No Build Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor

Water Course

300 0 300 600 Feet

October 2004

11400 SOUTH

N

10400 South (South Jordan Parkway)

South Jordan

Riverton

Sandy

Draper

10600 South

11400 South

11800 South

12300 South

12600 South

Jordan River

Utah Lake Distribution Canal

Utah and Salt Lake Canal

South Jordan Canal

Beckstead Ditch

Midas Creek

Butterfield Creek

Willow Creek

Galena Canal

Jordan and Salt Lake Canal

East Jordan Canal

River Front Parkway

Jordan Gateway

State Street

Lone Peak Parkway

Bangerter Highway

Redwood Road

1300 West

700 West

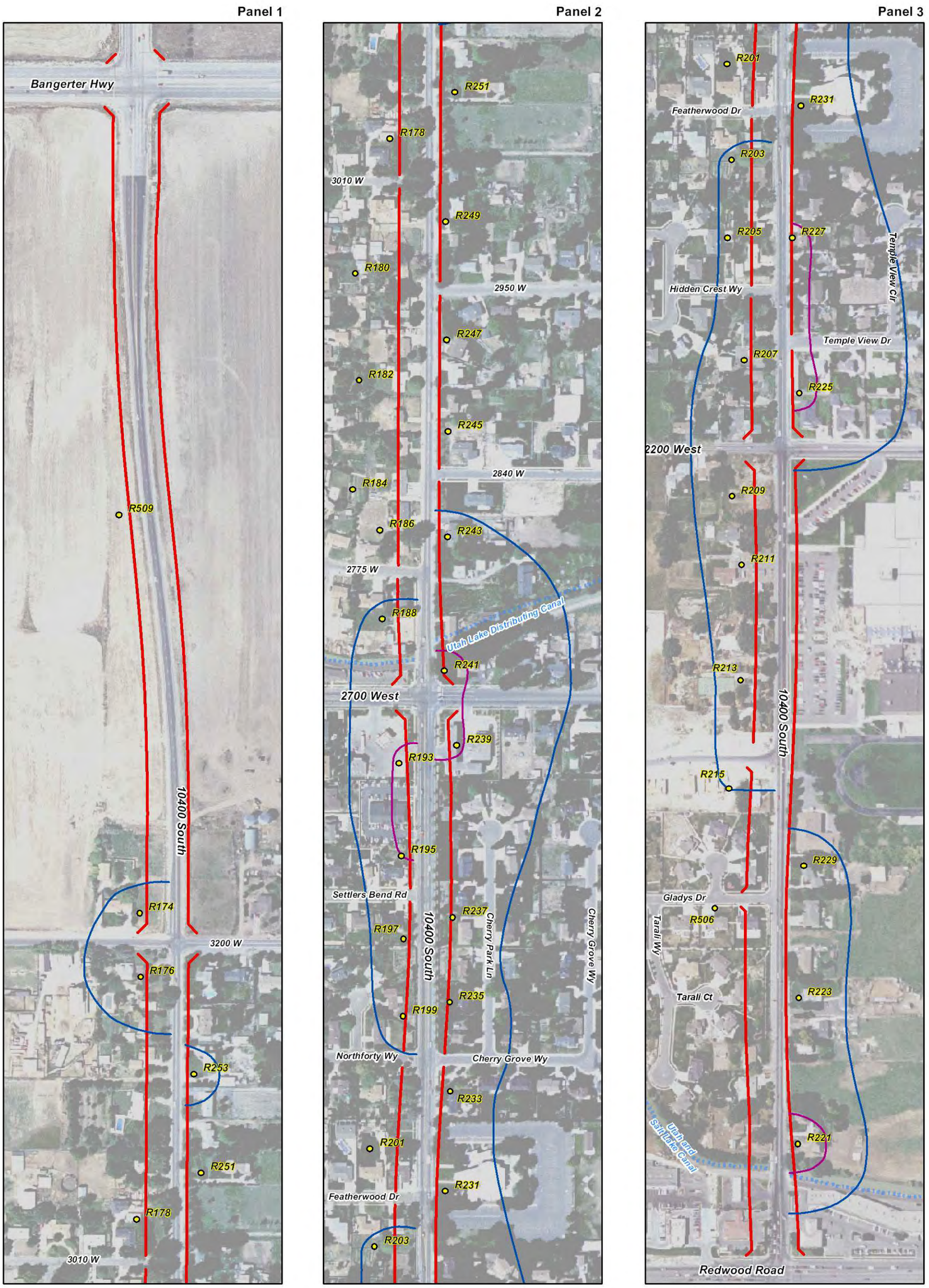
15

0.2 0 0.2 0.4
Miles

Existing Wall/Berm
Proposed Noise Wall
Perennial Streams and Canals
Intermittent Streams and Canals
Alternative Right-of-Way Line
City Boundary

11400 SOUTH
Environmental Impact Statement

Appendix H-2a. Alternative 1 Proposed and Existing Noise Walls



Alternative 1 Noise Levels

65 dBA

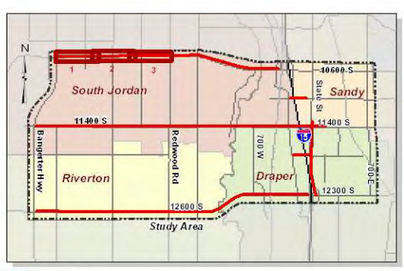
70 dBA

Noise Receptor

Water Course

Alternative Right-of-Way Line

300 0 300 600 Feet



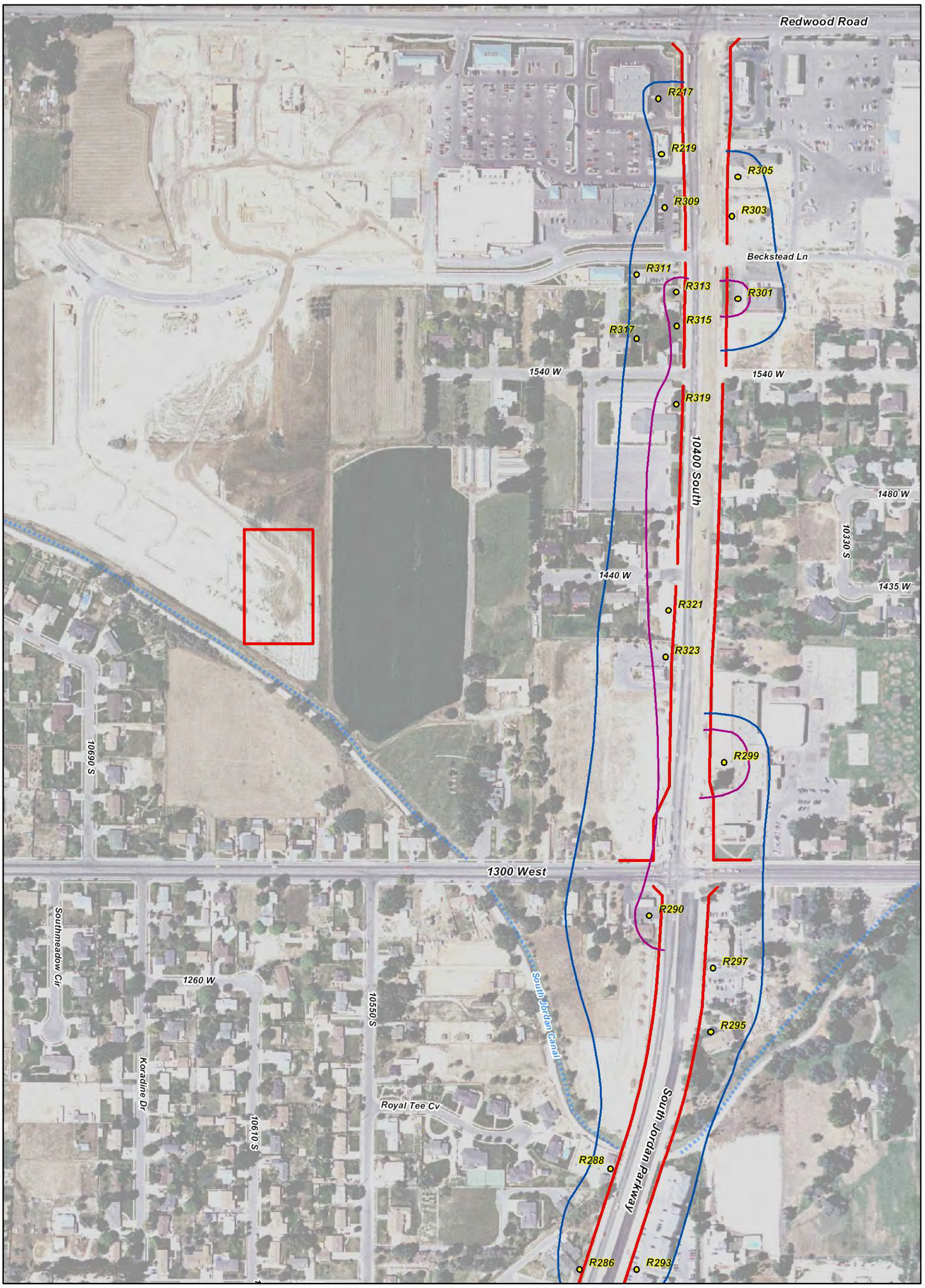
Panel Extents

October 2004

Appendix H-2b.
Alternative 1 Noise Contours

10400 South: Bangerter Highway to Redwood Road

11400 SOUTH



Alternative 1 Noise Levels

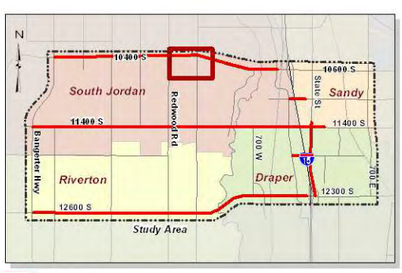
- 65 dBA
- 70 dBA

Noise Receptor

Water Course

Alternative Right-of-Way Line

300 0 300 600 Feet



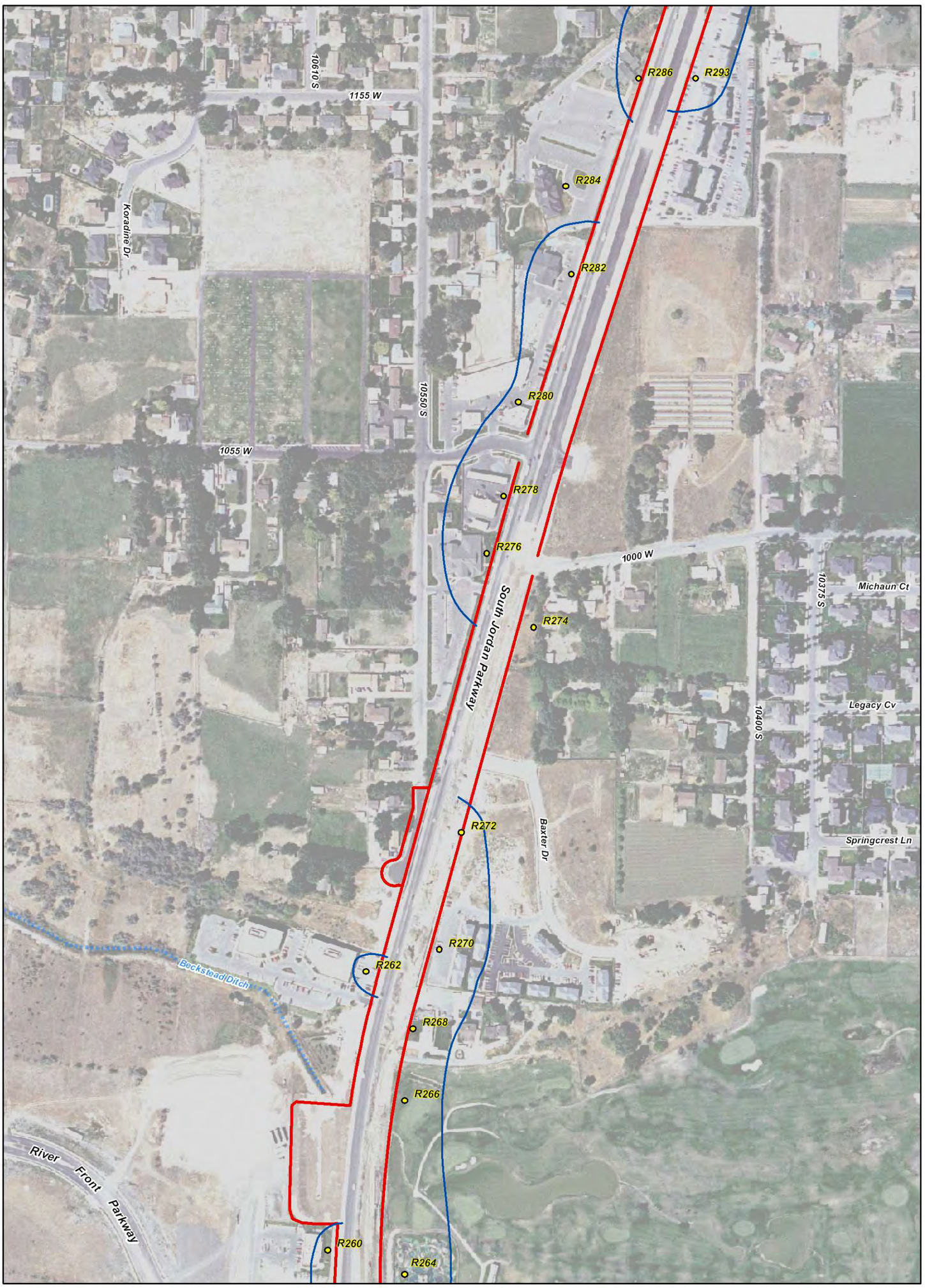
Panel Extents

October 2004

Appendix H-2c.
Alternative 1 Noise Contours

10400 South: Redwood Road to 1300 West

11400 SOUTH



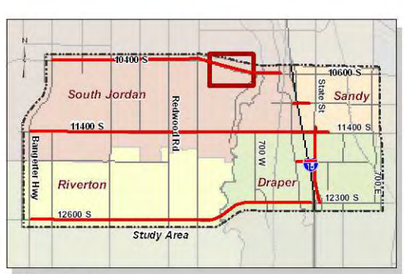
Appendix H-2d.
Alternative 1 Noise Contours

10400 South: 1300 West
to River Front Parkway

Alternative 1 Noise Levels
- 65 dBA
- 70 dBA

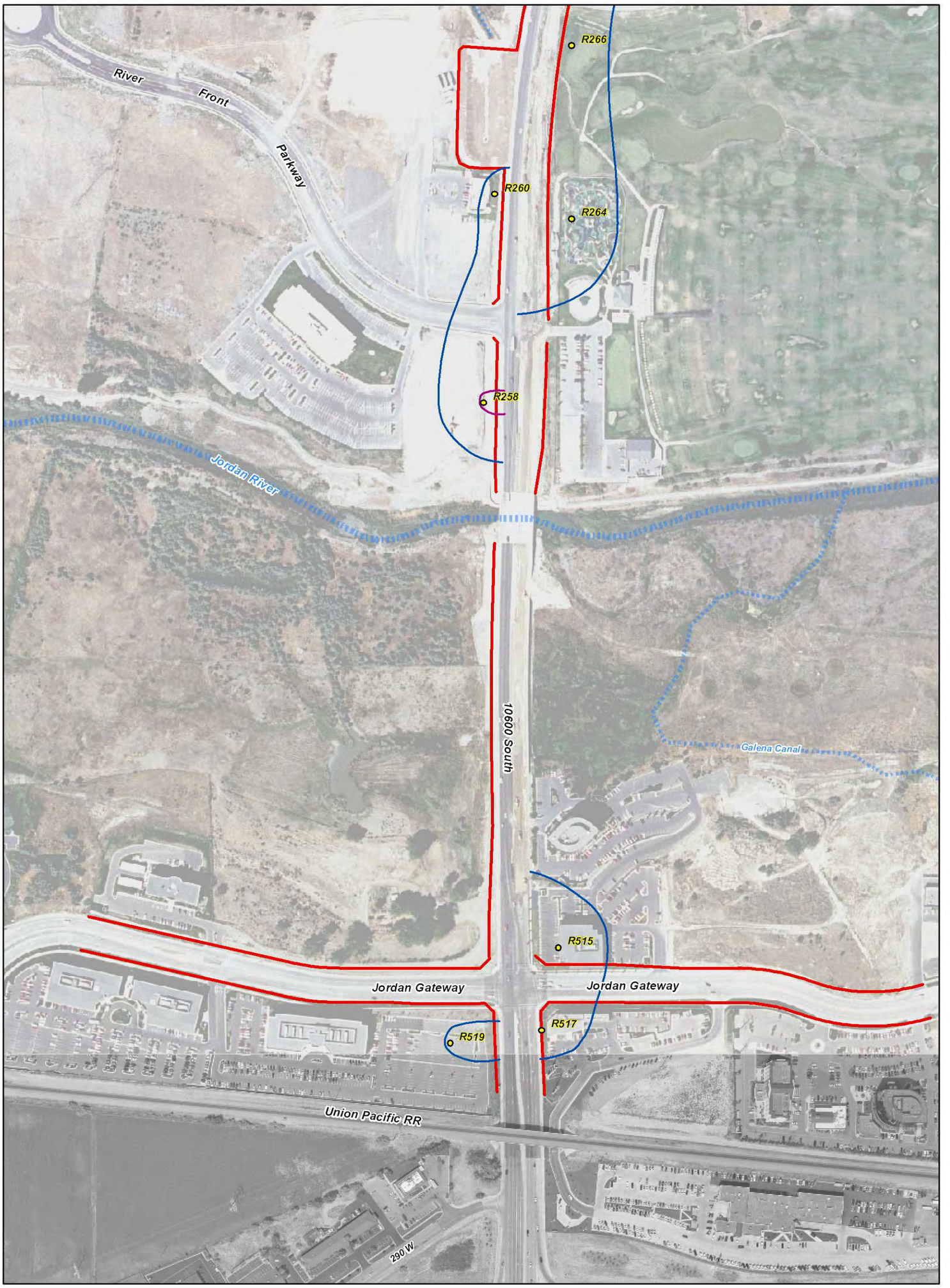
Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet



11400 SOUTH

October 2004



Alternative 1 Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet

Panel Extents

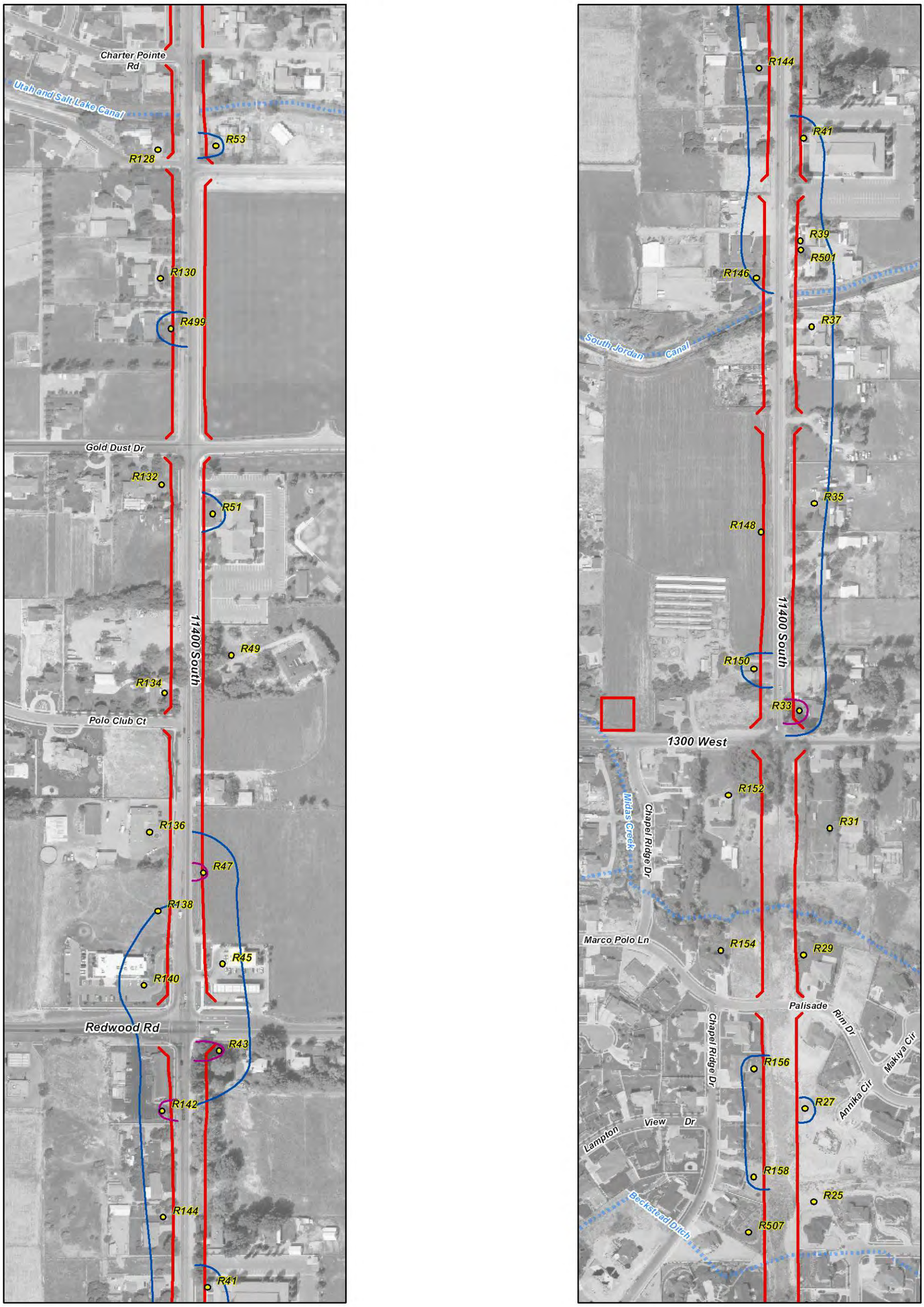
October 2004

Appendix H-2e.
Alternative 1 Noise Contours

10400 South: River Front Parkway to Jordan Gateway

11400 SOUTH


Panel 1
Panel 2
Panel 3
Bangerter Hwy
3800 West
11400 South
3600 West
Lucas Ln
2950 W
2820 W
2700 West
2570 W
2510 W
2480 W
2200 W
11370 S
11320 S
Tara Woods Ln
Utah Lake
Distributing Canal
Chapel Rim Wy
Roanoke Ln
Applegrove Ln
Charter Pointe Rd
Utah and Salt Lake Canal
R75
R93
R73
R95
R71
R97
R69
R85
R83
R87
R81
R89
R79
R91
R77
R99
R67
R101
R502
R103
R105
R65
R107
R109
R75
R109
R114
R63
R116
R118
R61
R120
R59
R122
R124
R57
R126
R55
R128
R53
R130
Alternative 1 Noise Levels
65 dBA
70 dBA
Noise Receptor
Water Course
Alternative Right-of-Way Line
300
0
300
600
Feet
Panel Extents
South Jordan
Sandy
Riverton
Draper
Redwood Rd
State St
Study Area
October 2004
Appendix H-2f.
Alternative 1 Noise Contours
11400 South: Bangerter Highway to 2200 West
11400 SOUTH

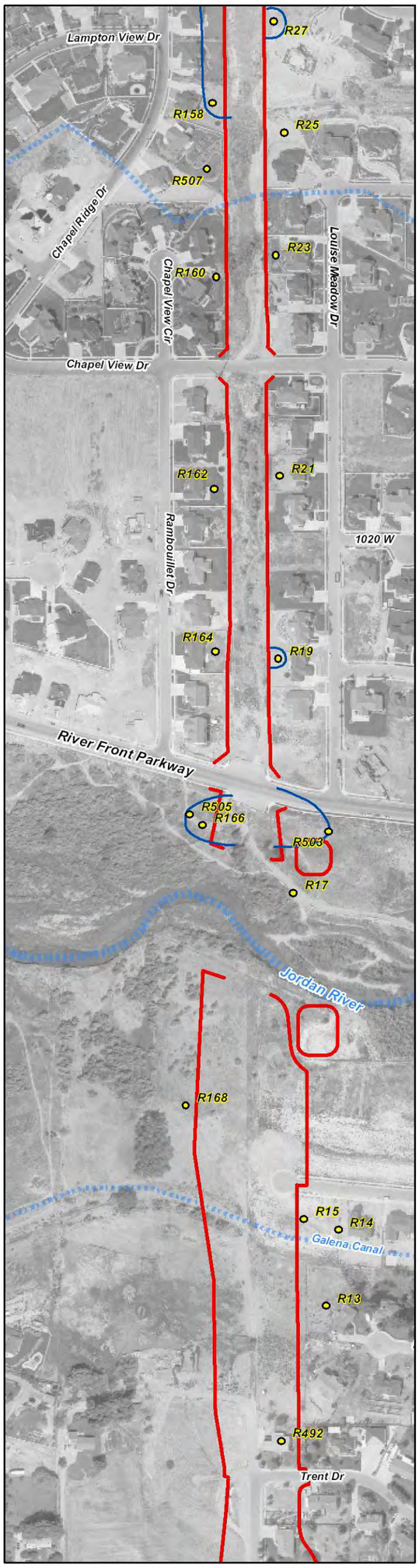


Appendix H-2g.
Alternative 1 Noise Contours

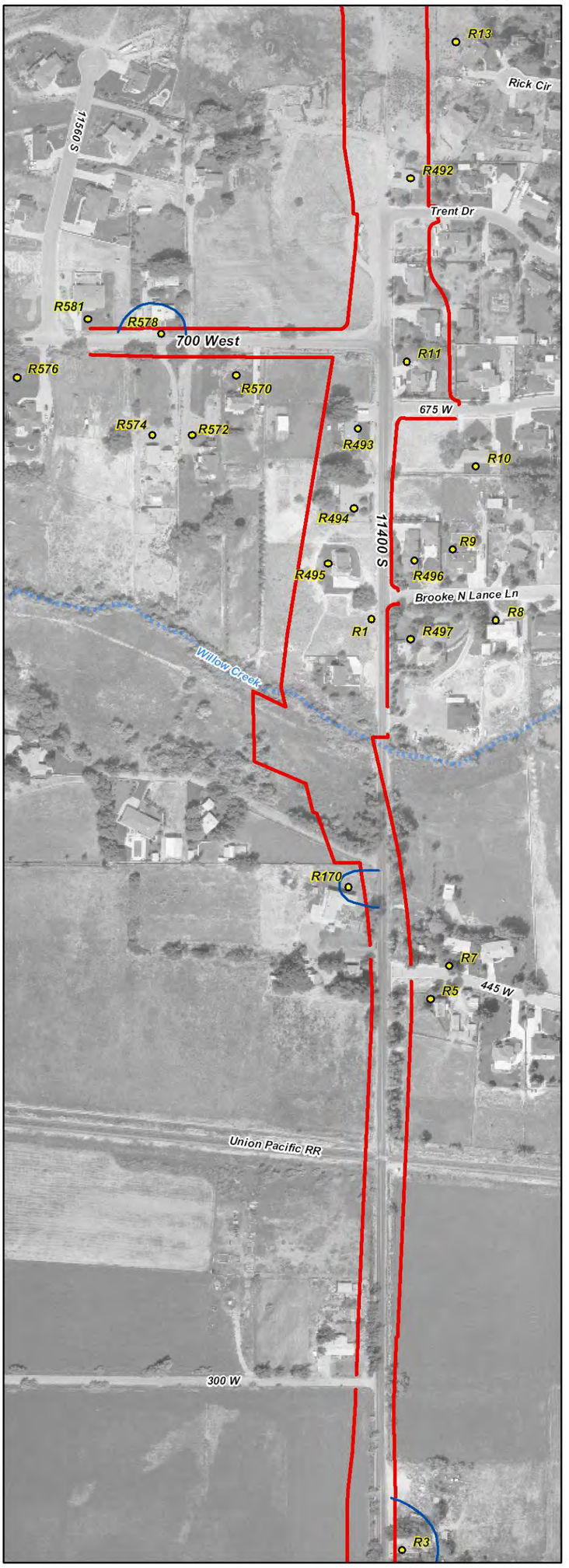
11400 South: 2200 West to Beckstead Ditch

11400 SOUTH

Panel 1



Panel 2



Alternative 1 Noise Levels

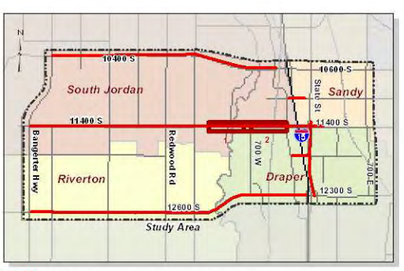
- 65 dBA
- 70 dBA

Noise Receptor

Water Course

Alternative Right-of-Way Line

300 0 300 600 Feet



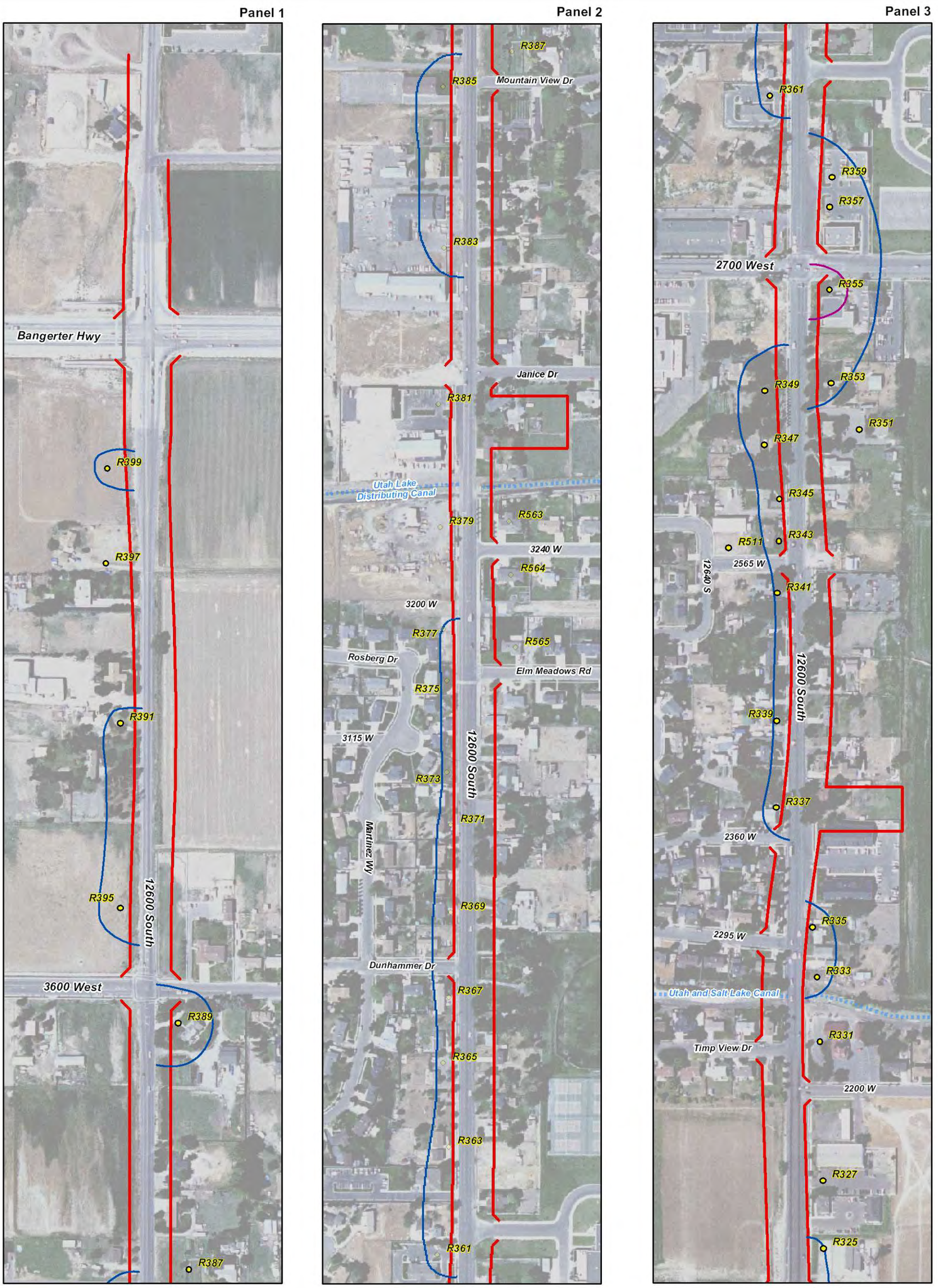
Panel Extents

October 2004

Appendix H-2h.
Alternative 1 Noise Contours

11400 South: Beckstead Ditch to 300 West

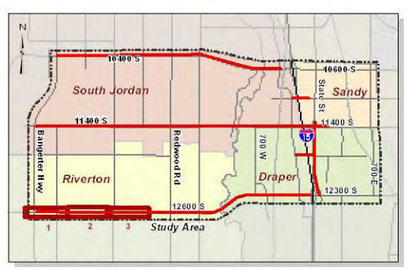
11400 SOUTH



Alternative 1 Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet



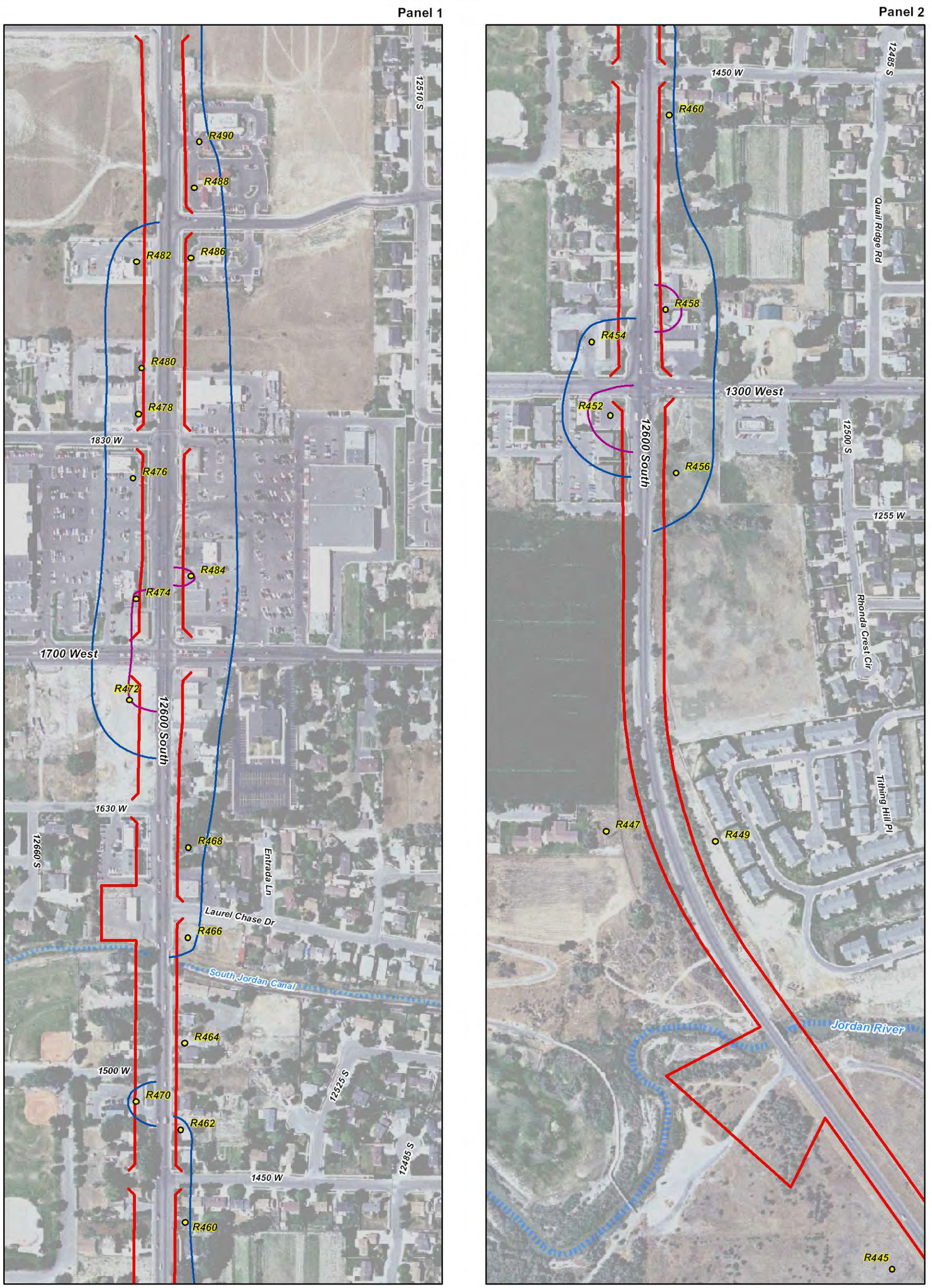
Panel Extents

October 2004

Appendix H-2i.
Alternative 1 Noise Contours

12600 South: Bangerter Highway to 2200 West

11400 SOUTH



Alternative 1 Noise Levels

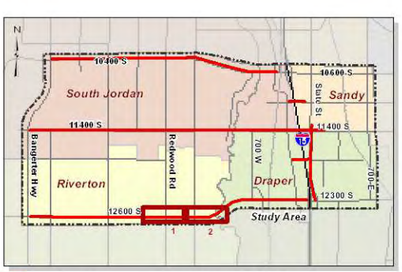
- 65 dBA
- 70 dBA

Noise Receptor

Water Course

Alternative Right-of-Way Line

300 0 300 600 Feet



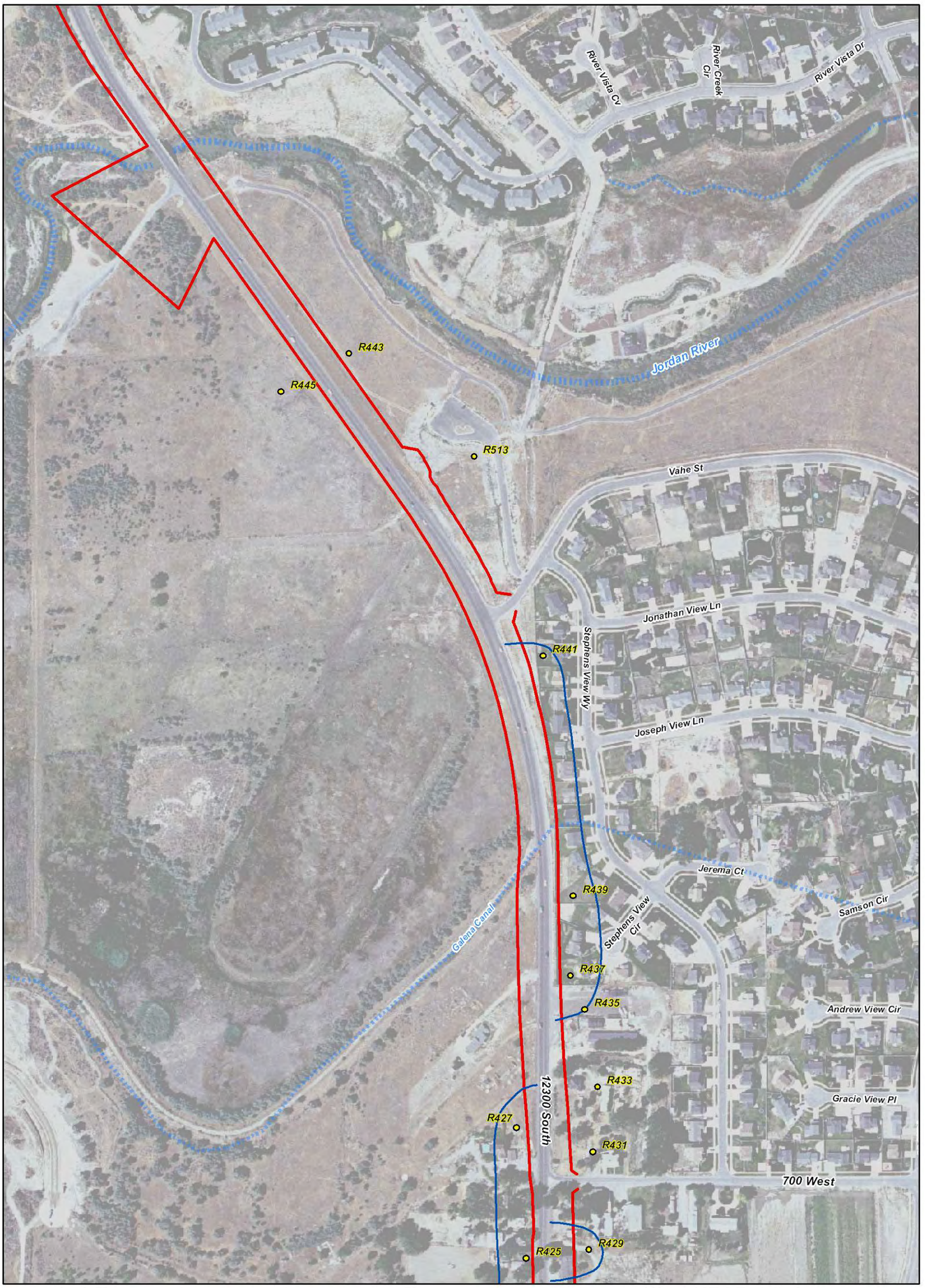
Panel Extents

October 2004

Appendix H-2j.
Alternative 1 Noise Contours

12600 South: 2200 West to Jordan River

11400 SOUTH



Alternative 1 Noise Levels

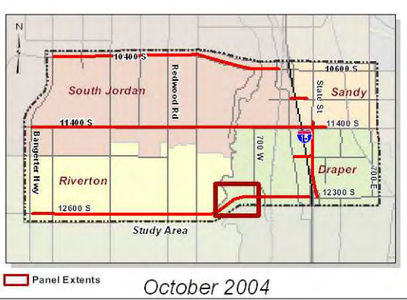
- 65 dBA
- 70 dBA

Noise Receptor

Water Course

Alternative Right-of-Way Line

300 0 300 600 Feet



October 2004

Appendix H-2k.
Alternative 1 Noise Contours

12300 South: Jordan River to 700 West

11400 SOUTH

Alternative 1 Noise Levels

65 dBA

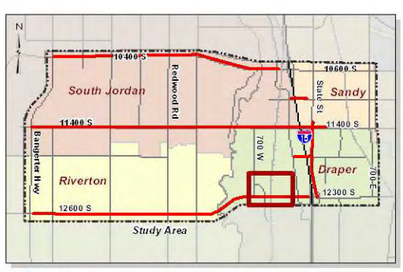
70 dBA

Noise Receptor

Water Course

Alternative Right-of-Way Line

300 0 300 600 Feet



October 2004

Appendix H-2l.
Alternative 1 Noise Contours
12300 South: 700 West to 265 West

11400 SOUTH

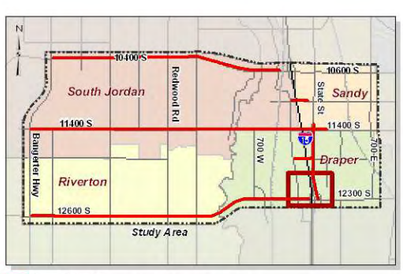
Appendix H-2m.
Alternative 1 Noise Contours

12300 South/State Street: 265 West to State Street

Alternative 1 Noise Levels
- 65 dBA
- 70 dBA

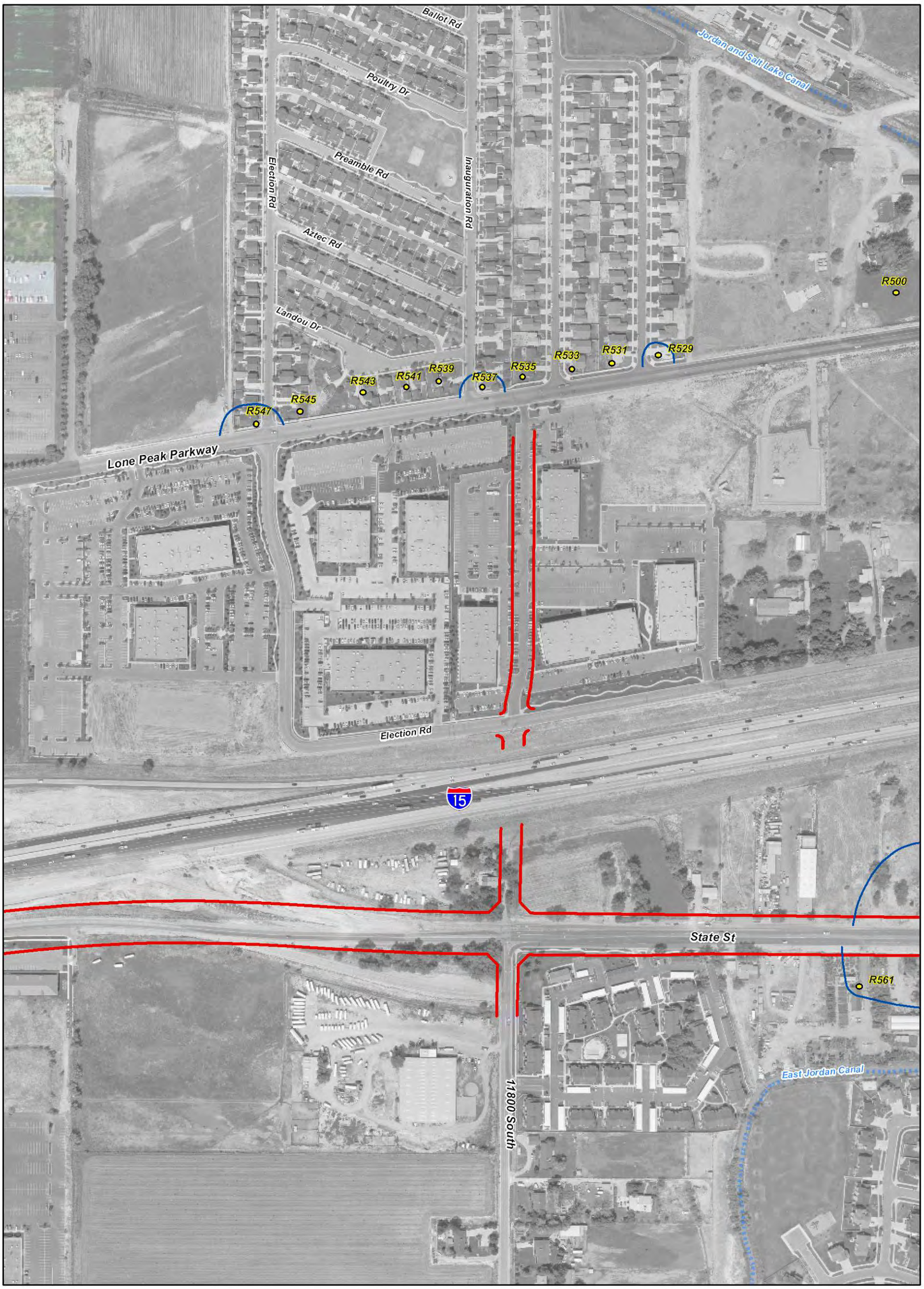
Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet



October 2004

11400 SOUTH

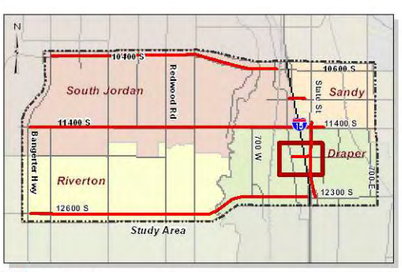


Alternative 1 Noise Levels

- 65 dBA
- 70 dBA

- Noise Receptor
- Water Course
- Alternative Right-of-Way Line

300 0 300 600 Feet



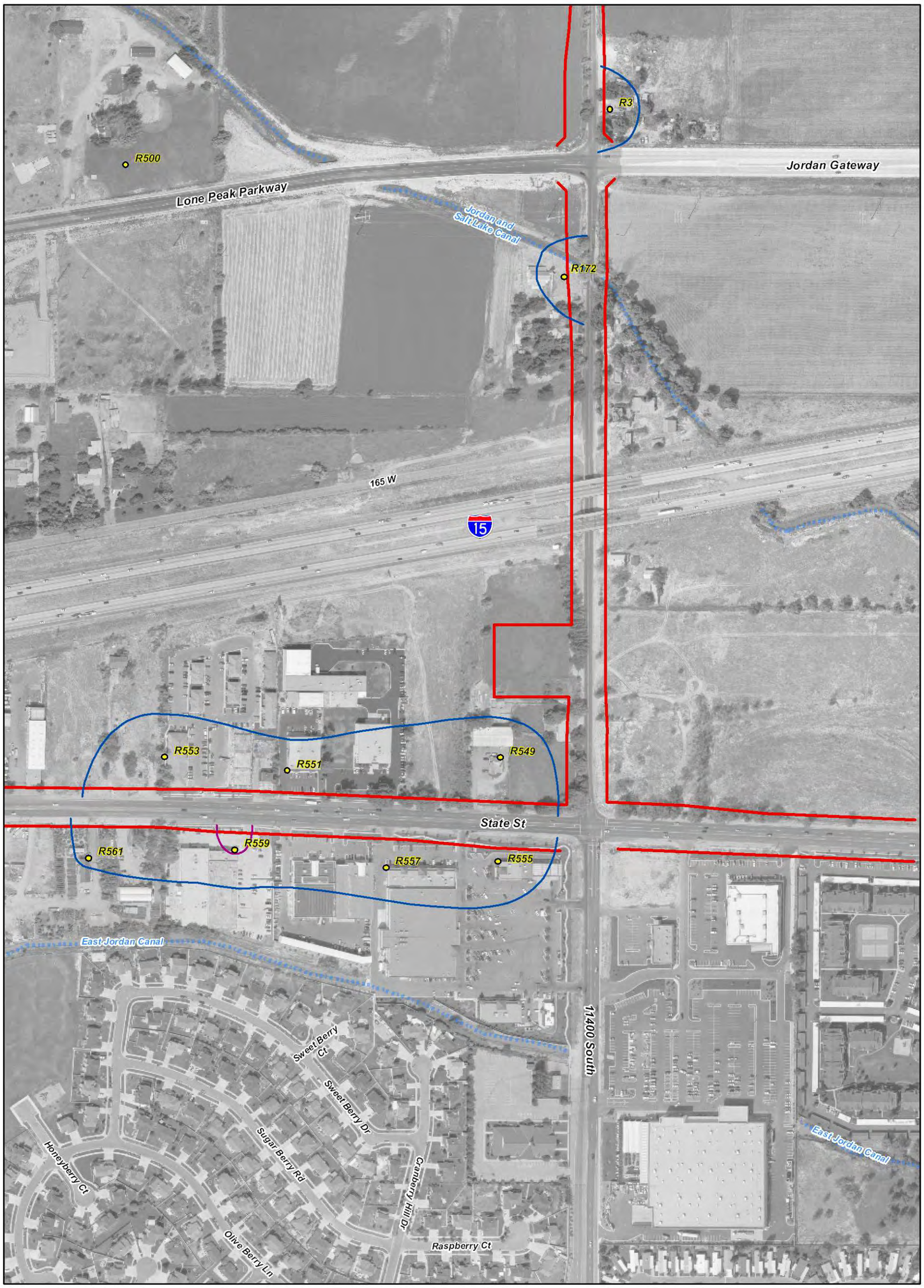
Panel Extents

October 2004

Appendix H-2n.
Alternative 1 Noise Contours

State Street and 11800 South Overpass

11400 SOUTH



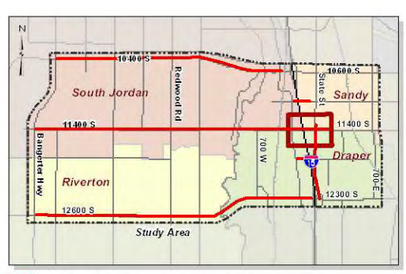
Appendix H-2o.
Alternative 1 Noise Contours

State Street: 11400 South Area

Alternative 1 Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

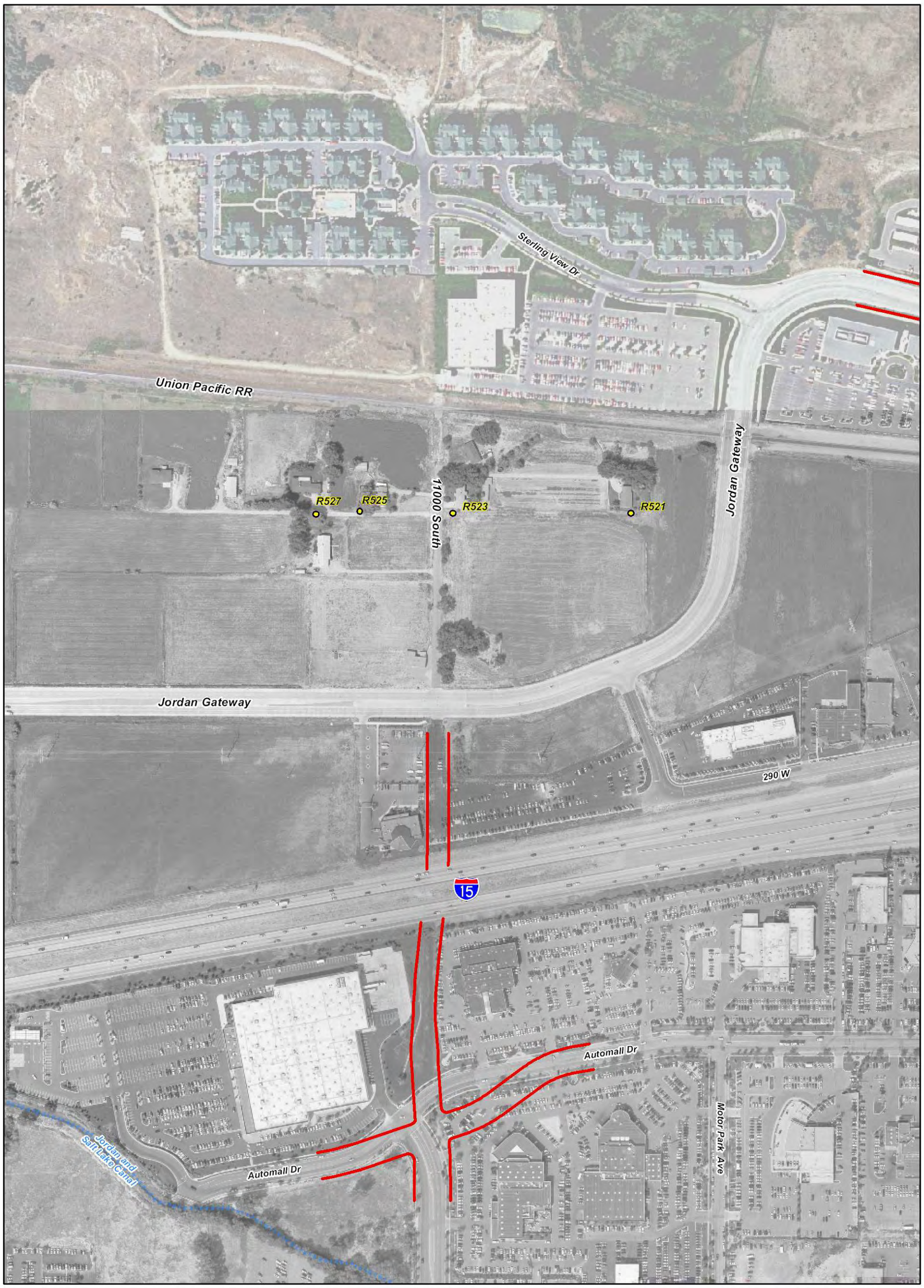
300 0 300 600 Feet



Panel Extents

October 2004

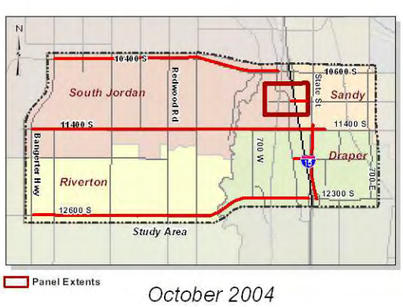
11400 SOUTH



Appendix H-2p.
Alternative 1 Noise Contours
11000 South Underpass

Alternative 1 Noise Levels
65 dBA
70 dBA
Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet



October 2004

11400 SOUTH

N

10400 South (South Jordan Parkway)

South Jordan

Utah Lake Distribution Canal

Utah and Salt Lake Canal

South Jordan Canal

Midas Creek

Beckstead Ditch

Jordan River

River Front Parkway

Jordan Gateway

State Street

Sandy

10600 South

15

11400 South

East Jordan Canal

Galena Canal

Jordan and Salt Lake Canal

Lone Peak Parkway

11800 South

Butterfield Creek

Willow Creek

Bangerter Highway

Riverton

Redwood Road

1300 West

700 West

Draper

12300 South

12600 South

0.2 0 0.2 0.4 Miles

Existing Wall/Berm
Proposed Noise Wall
Perennial Streams and Canals
Intermittent Streams and Canals
Alternative Right-of-Way Line
City Boundary

11400 SOUTH
Environmental Impact Statement

Appendix H-3a. Alternative 3A Proposed and Existing Noise Walls

Alternative 3A Noise Levels

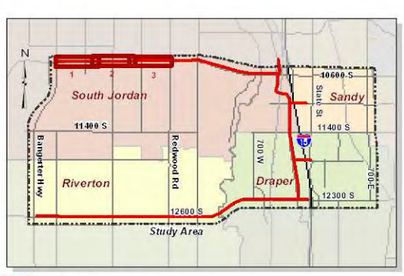
- 65 dBA
- 70 dBA

Noise Receptor

Water Course

Alternative Right-of-Way Line

300 0 300 600 Feet

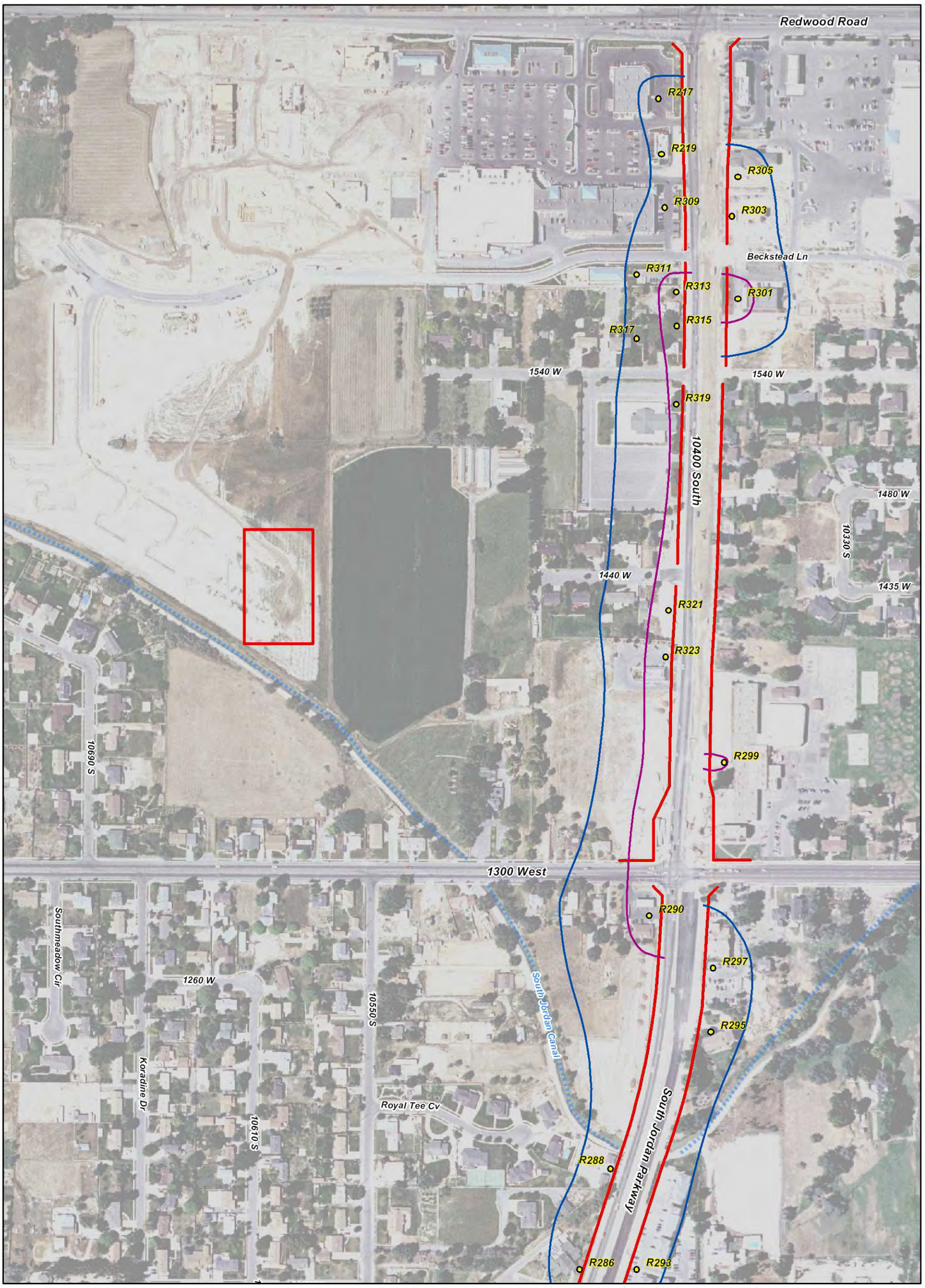


October 2004

Appendix H-3b.
Alternative 3A Noise Contours

10400 South: Bangerter Highway to Redwood Road

11400 SOUTH



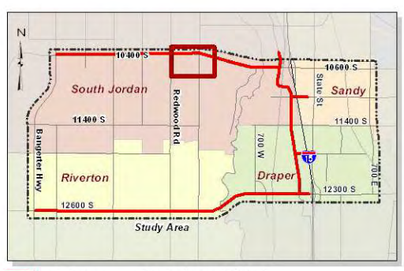
Appendix H-3c.
Alternative 3A Noise Contours

10400 South: Redwood Road to 1300 West

Alternative 3A Noise Levels
- 65 dBA
- 70 dBA

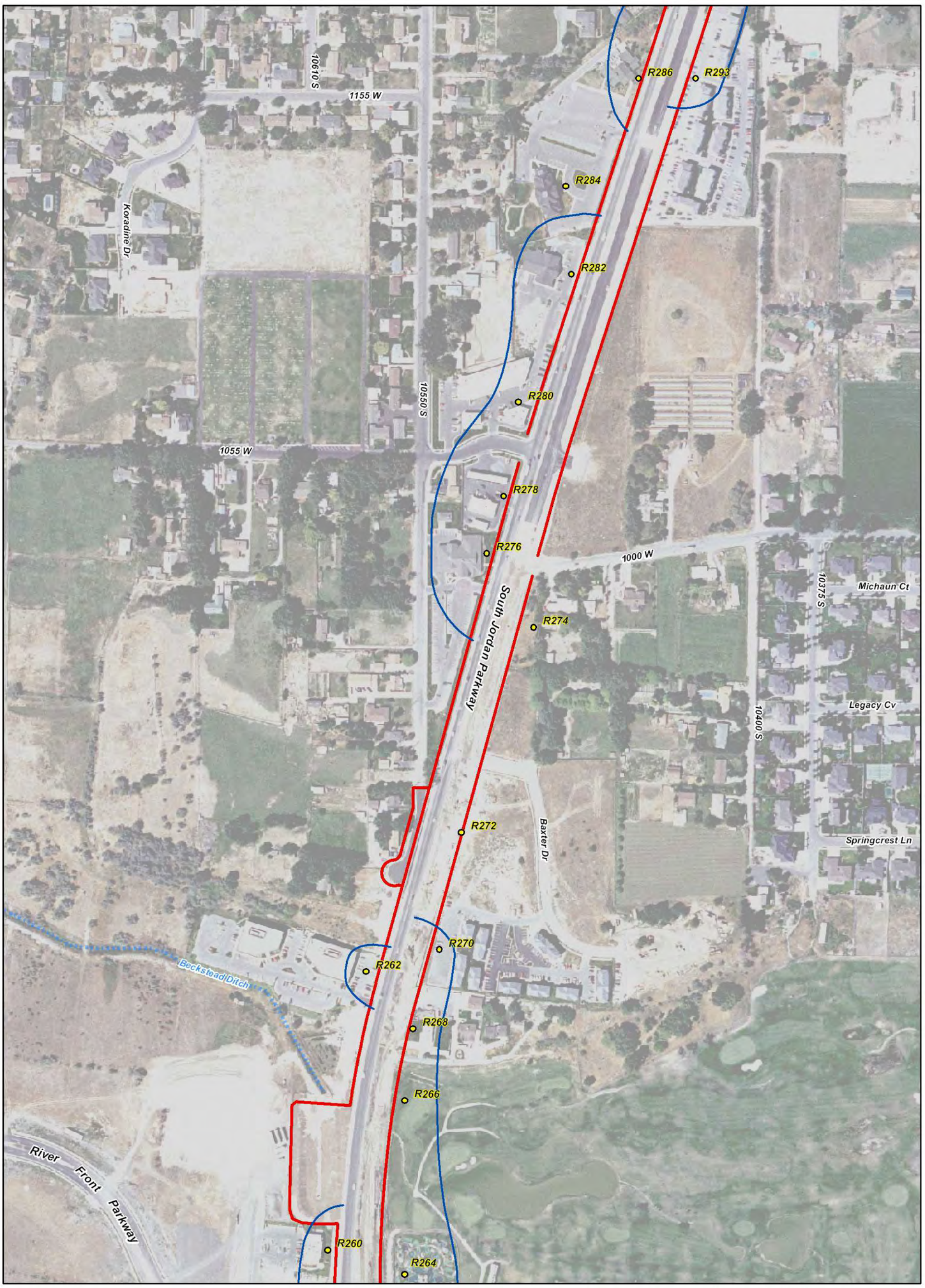
Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet



October 2004

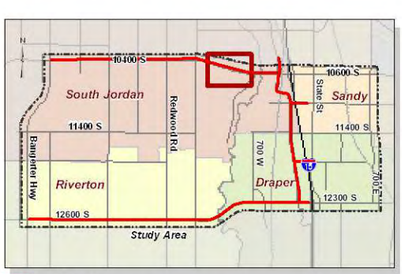
11400 SOUTH



Alternative 3A Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet

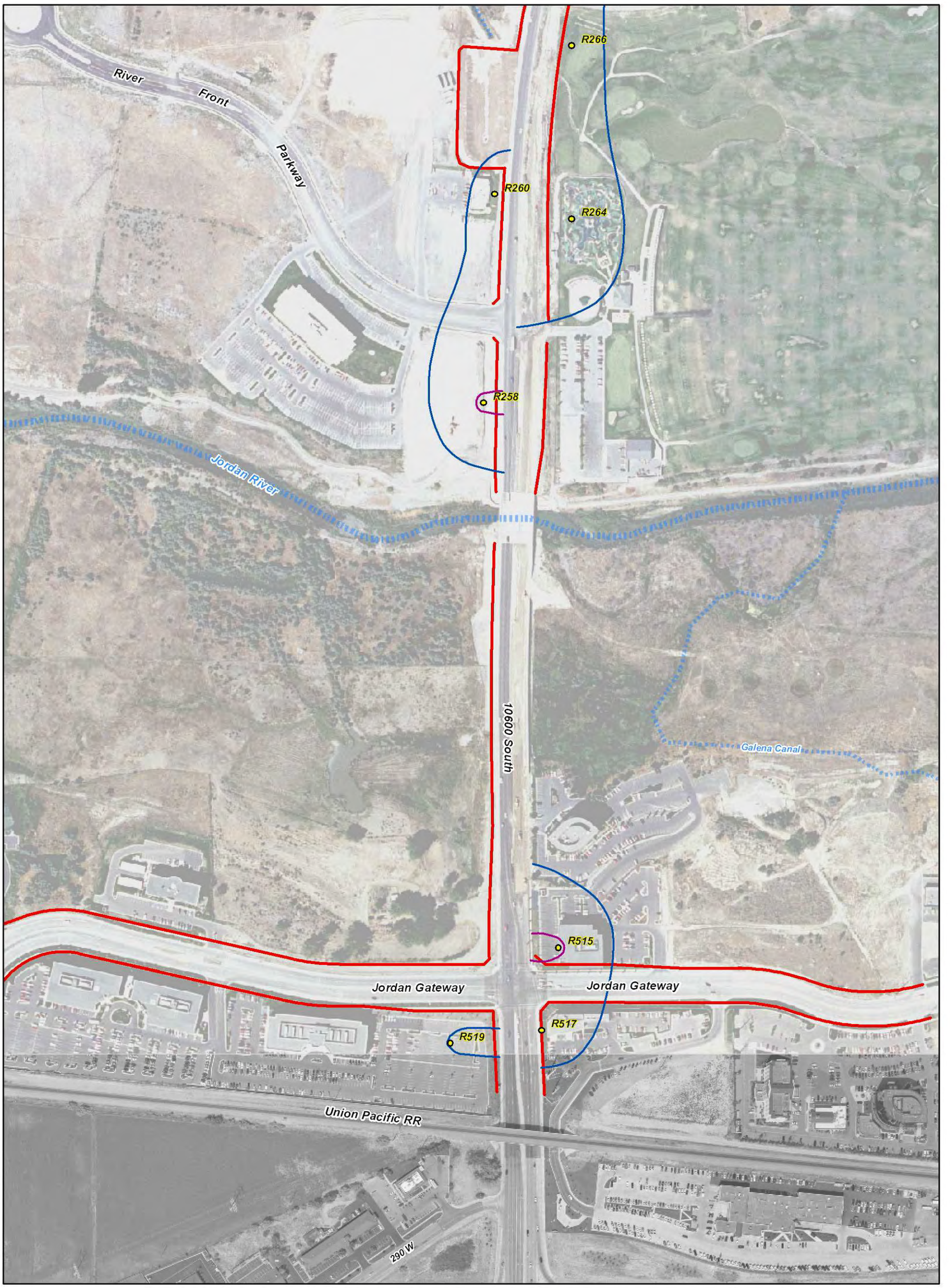


Panel Extents

October 2004

Appendix H-3d.
Alternative 3A Noise Contours
10400 South: 1300 West
to River Front Parkway

11400 SOUTH



Alternative 3A Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

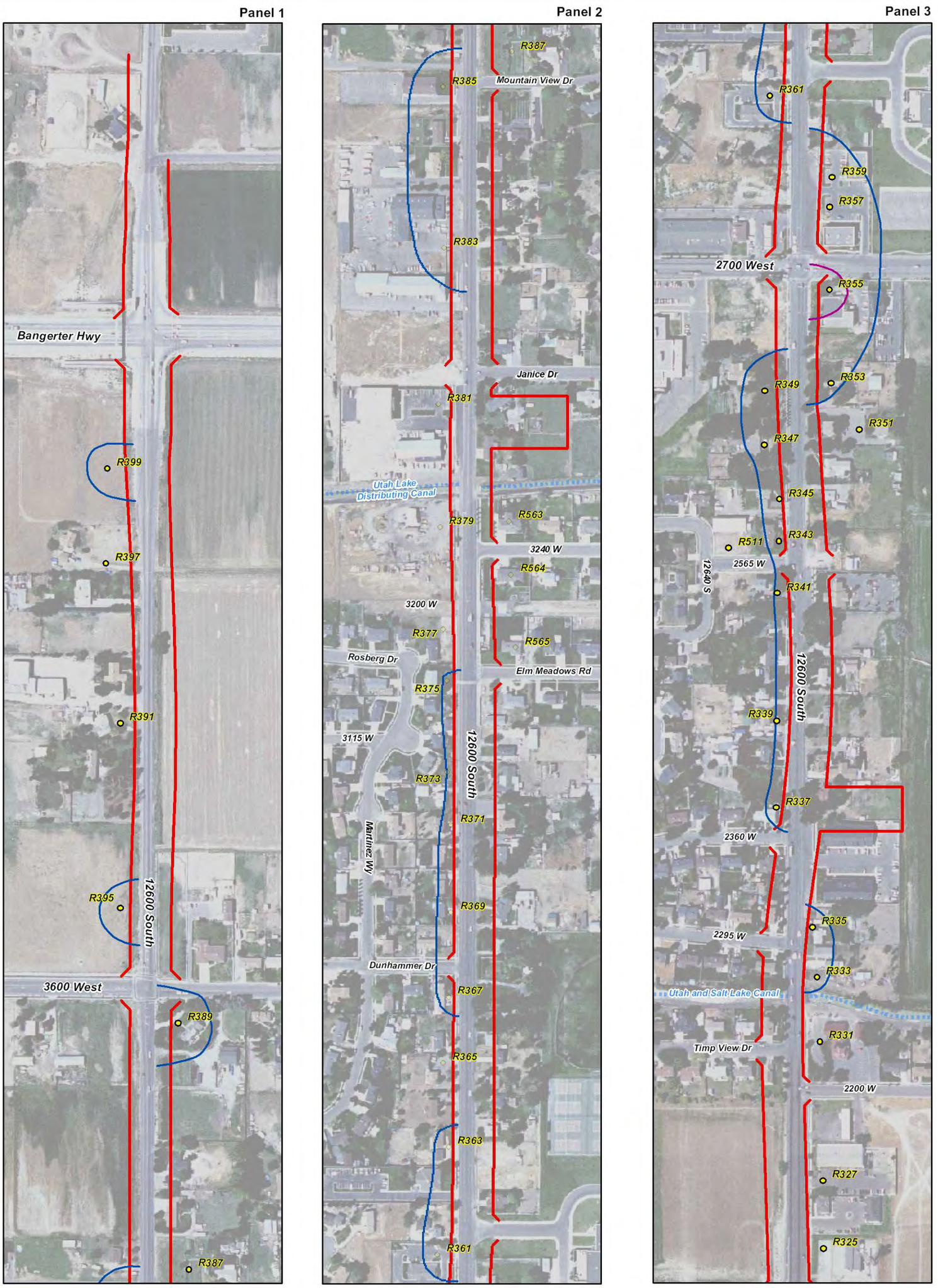
300 0 300 600 Feet

Panel Extents

October 2004

Appendix H-3e.
Alternative 3A Noise Contours
10400 South: River Front Parkway to Jordan Gateway

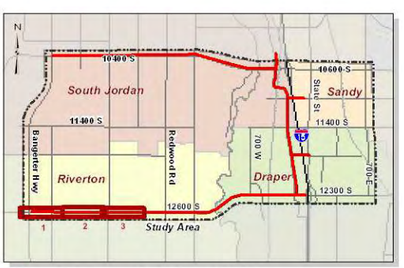
11400 SOUTH



Alternative 3A Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet



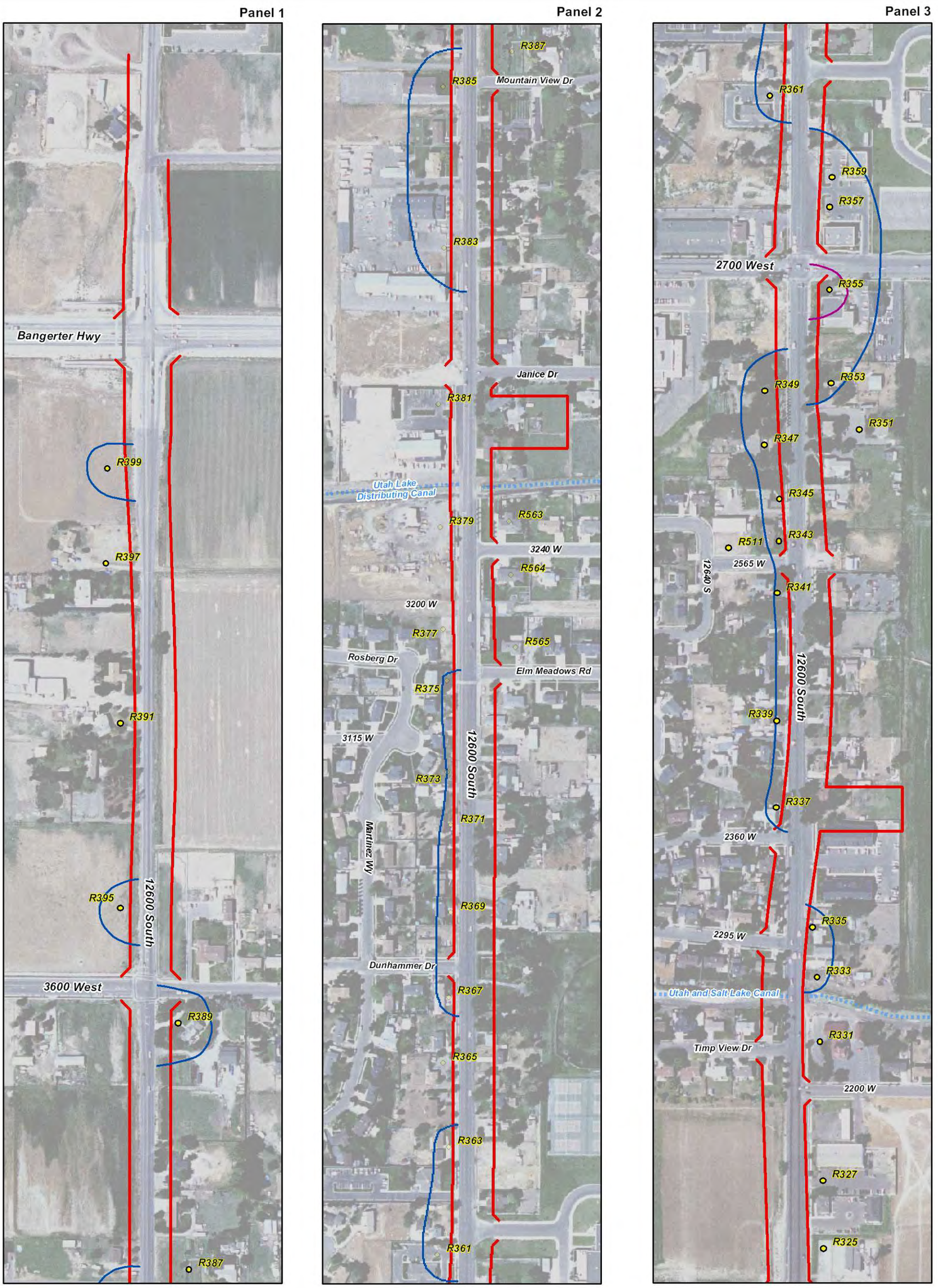
Panel Extents

October 2004

Appendix H-3f.
Alternative 3A Noise Contours

12600 South: Bangerter Highway to 2200 West

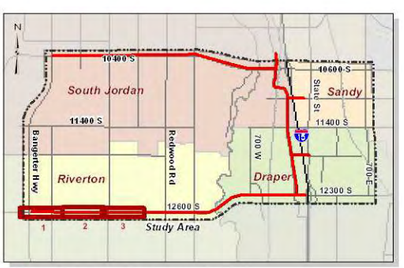
11400 SOUTH



Alternative 3A Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet



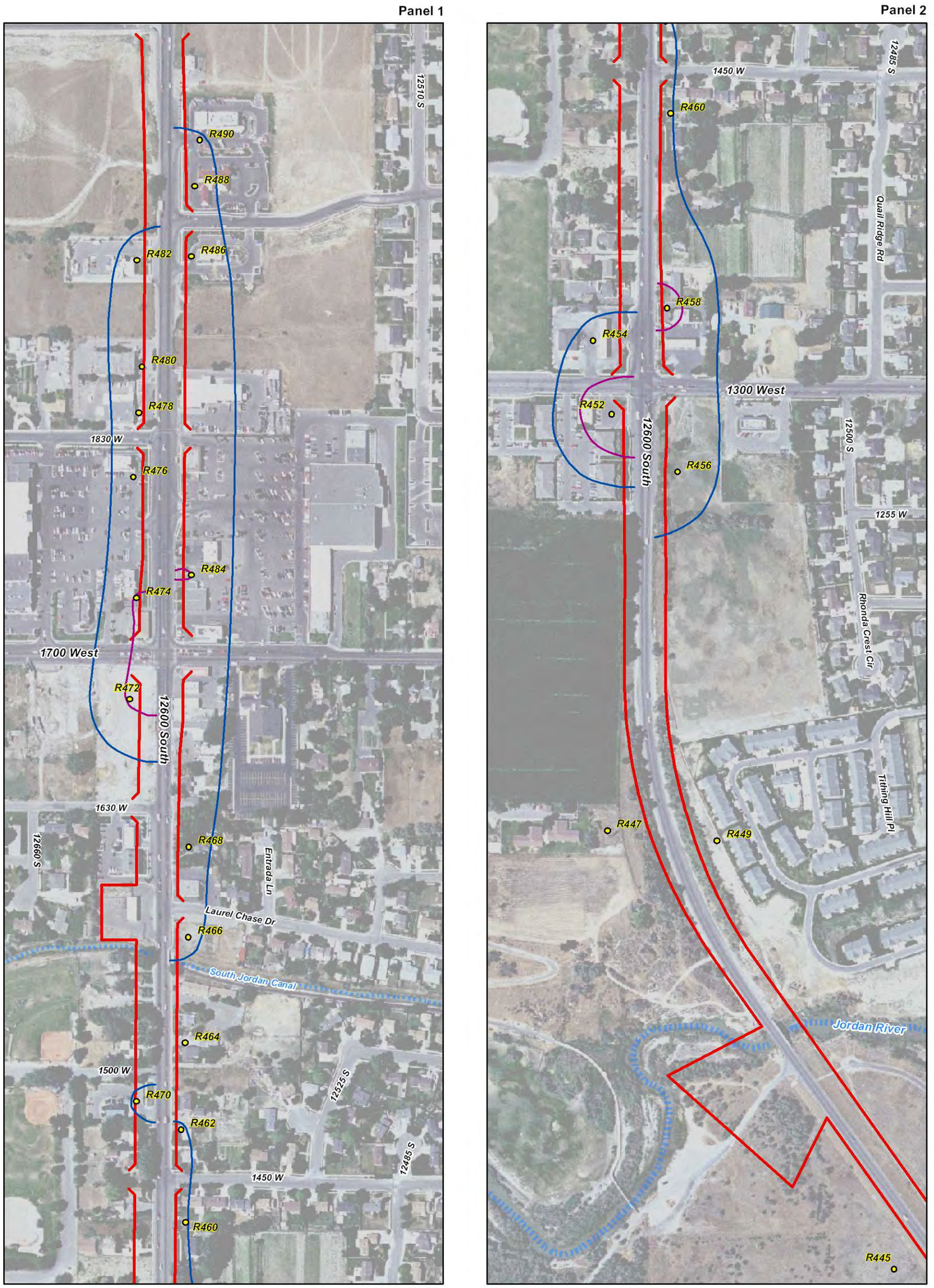
Panel Extents

October 2004

Appendix H-3g.
Alternative 3A Noise Contours

12600 South: Bangerter Highway to 2200 West

11400 SOUTH

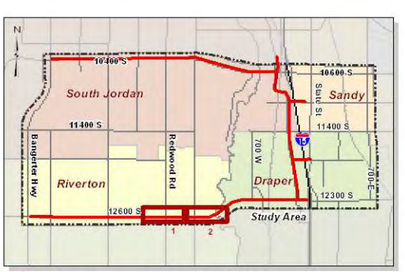


Alternative 3A Noise Levels

- 65 dBA
- 70 dBA

- Noise Receptor
- Water Course
- Alternative Right-of-Way Line

300 0 300 600 Feet



Panel Extents

October 2004

Appendix H-3h.
Alternative 3A Noise Contours

12600 South: 2200 West to Jordan River

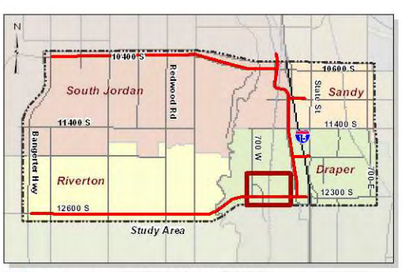
11400 SOUTH

Alternative 3A Noise Levels

- 65 dBA
- 70 dBA

- Noise Receptor
- Water Course
- Alternative Right-of-Way Line

300 0 300 600 Feet



October 2004

Appendix H-3i.
Alternative 3A Noise Contours
12300 South: 700 West to 265 West

11400 SOUTH

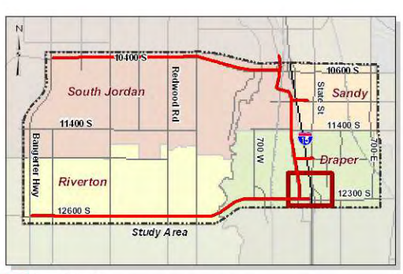
Appendix H-3j.
Alternative 3A Noise Contours

12300 South/State Street: 265 West to State Street

Alternative 3A Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet



Panel Extents

October 2004

11400 SOUTH

Alternative 3A Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

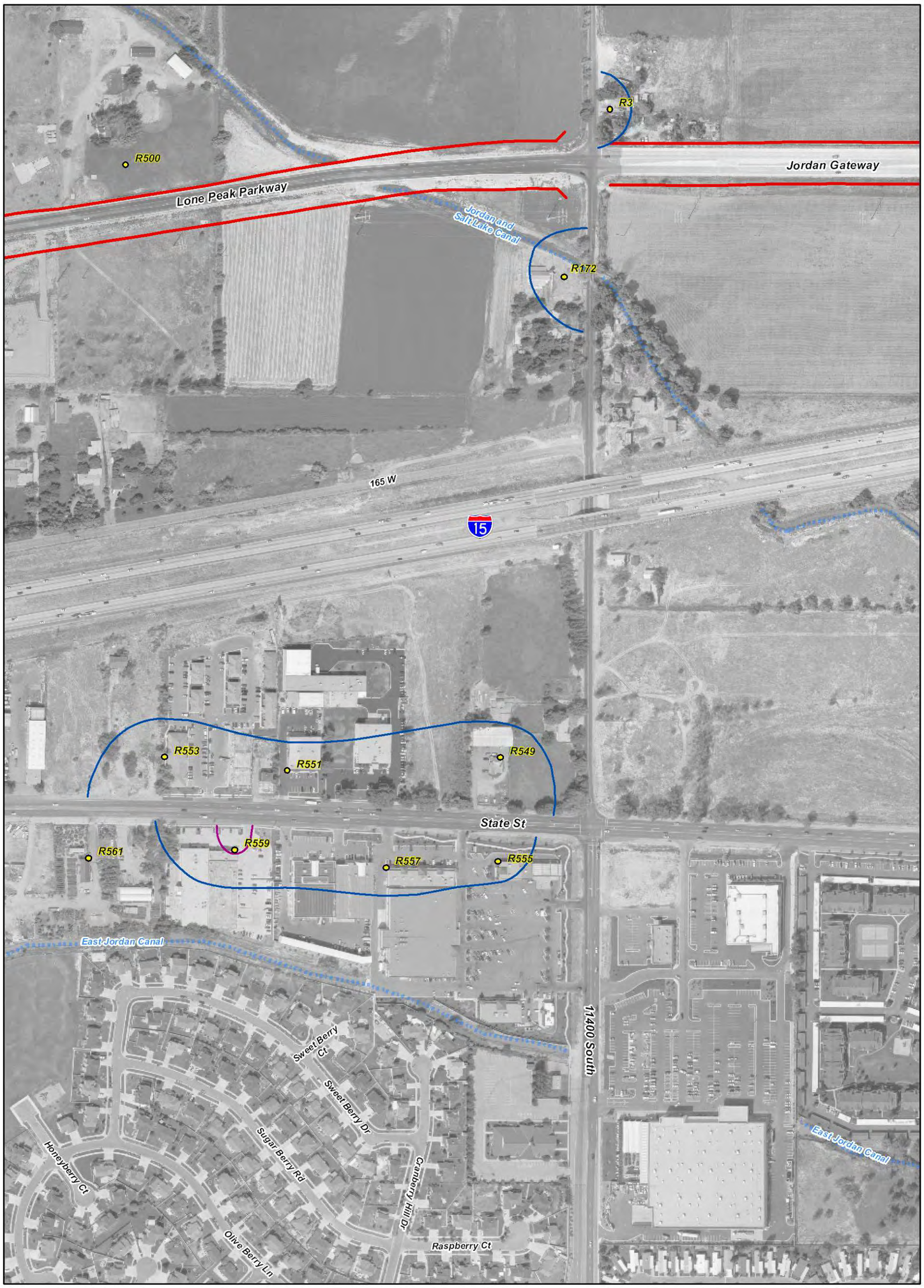
300 0 300 600 Feet

Panel Extents

October 2004

Appendix H-3k.
Alternative 3A Noise Contours
State Street and 11800 South Overpass

11400 SOUTH



Appendix H-3l.
Alternative 3A Noise Contours

State Street: 11400 South Area

Alternative 3A Noise Levels
- 65 dBA
- 70 dBA

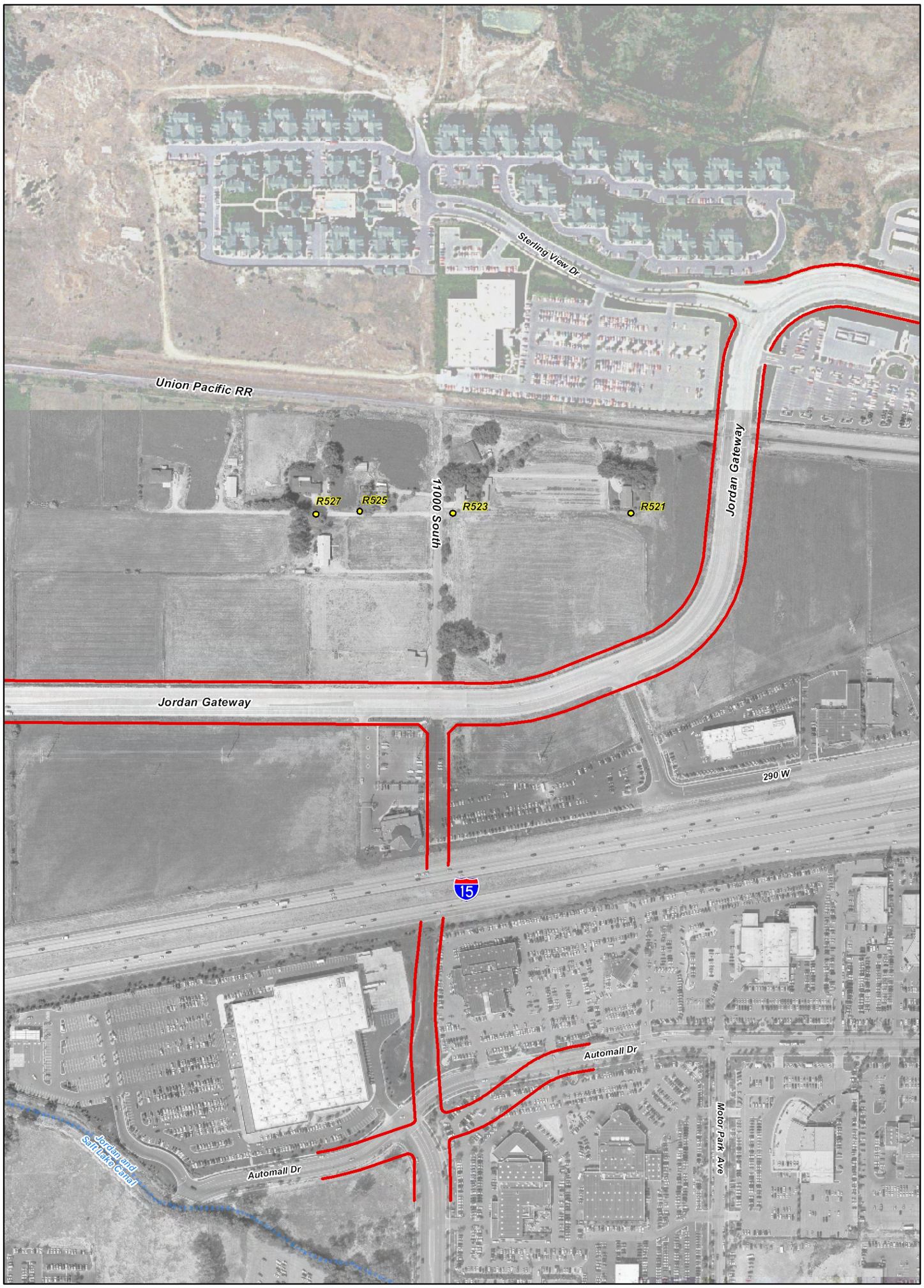
Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet

Panel Extents

October 2004

11400 SOUTH

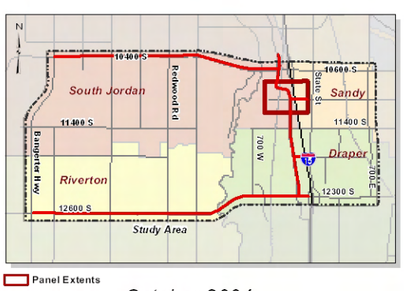


Appendix H-3m.
Alternative 3A Noise Contours
11000 South Underpass

Alternative 3A Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

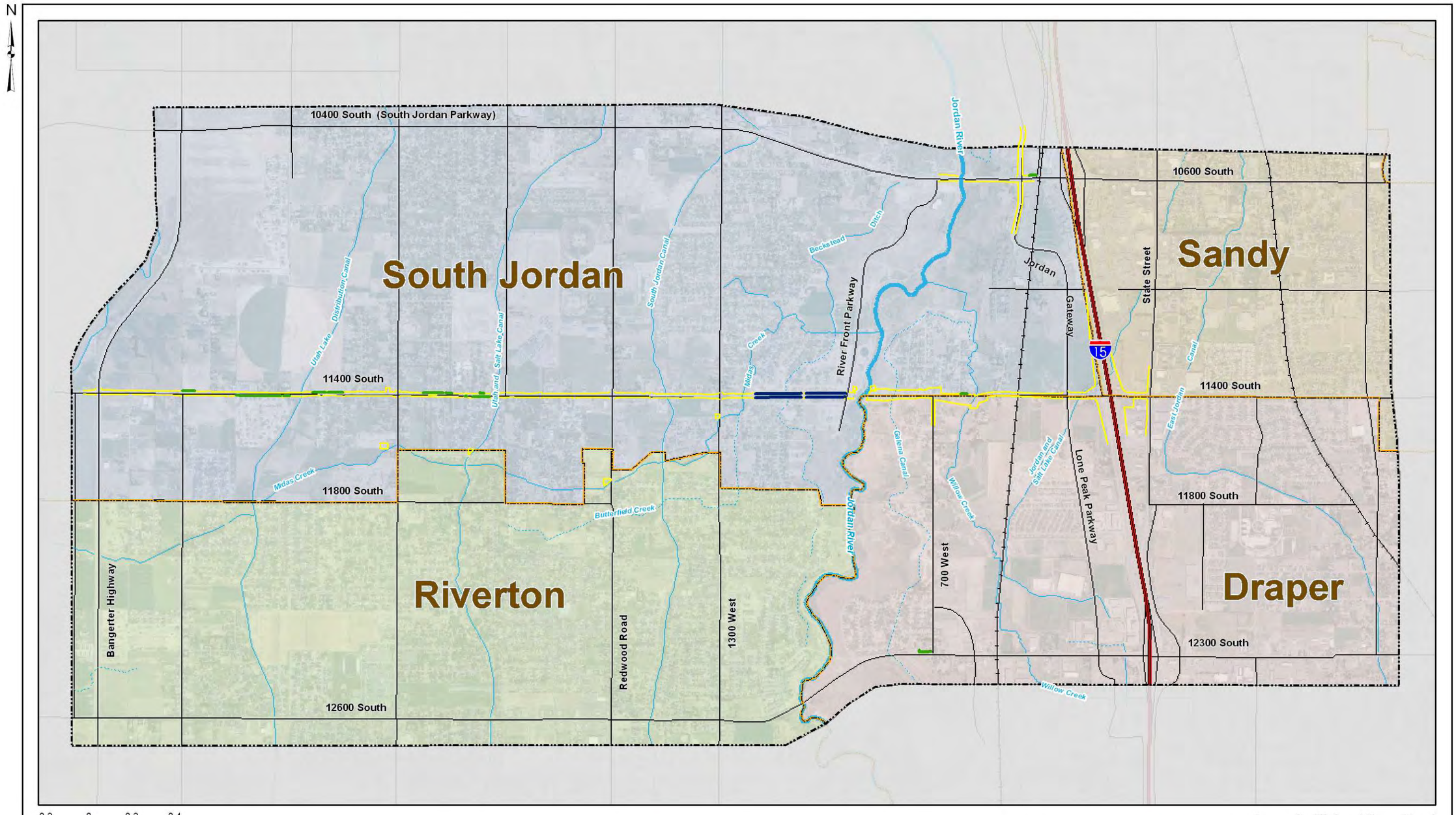
300 0 300 600 Feet



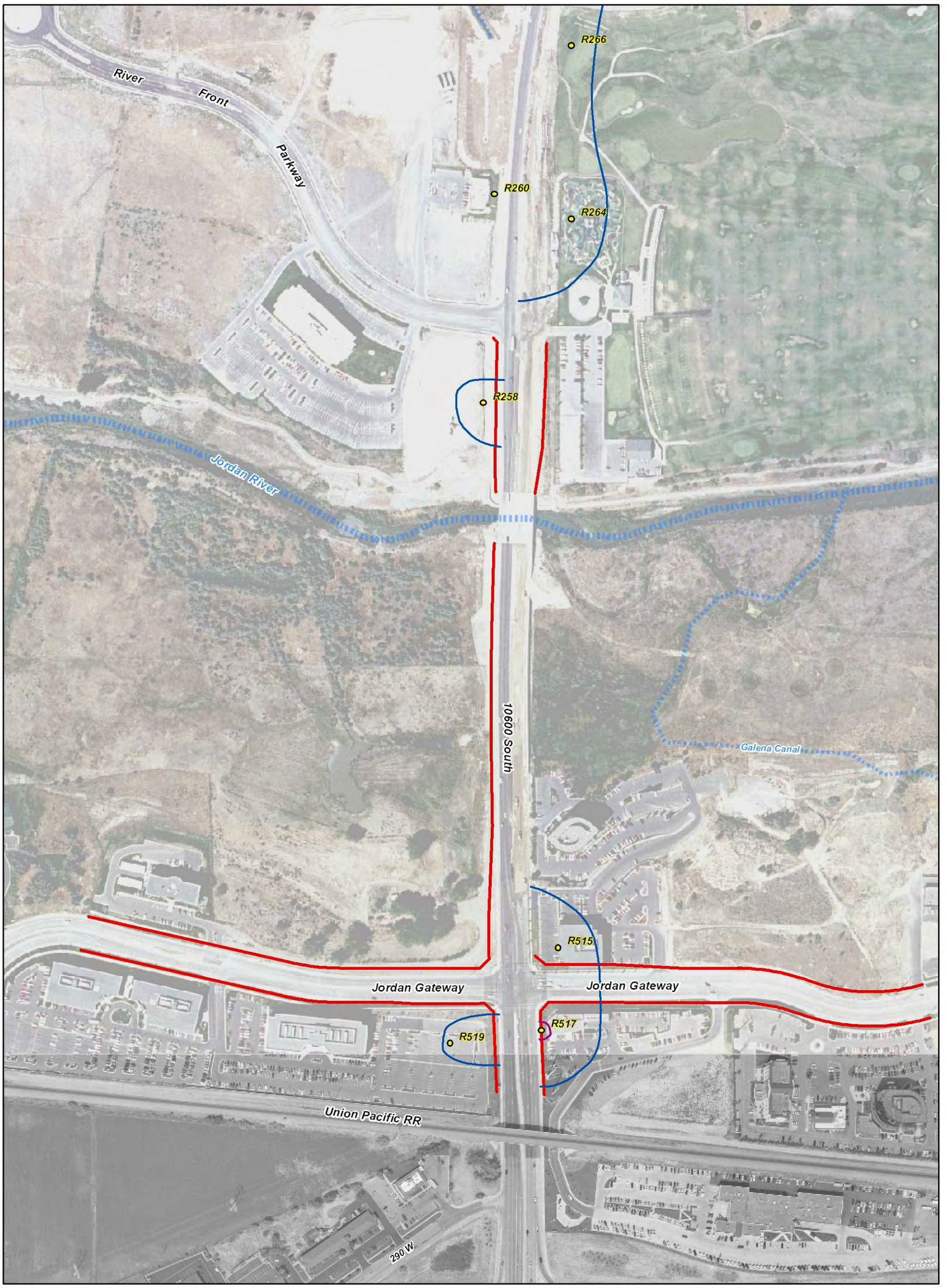
Panel Extents

October 2004

11400 SOUTH



Appendix H-4a. Alternative 4 Proposed and Existing Noise Walls



Alternative 4 Noise Levels

- 65 dBA
- 70 dBA

- Noise Receptor
- Water Course
- Alternative Right-of-Way Line

300 0 300 600 Feet

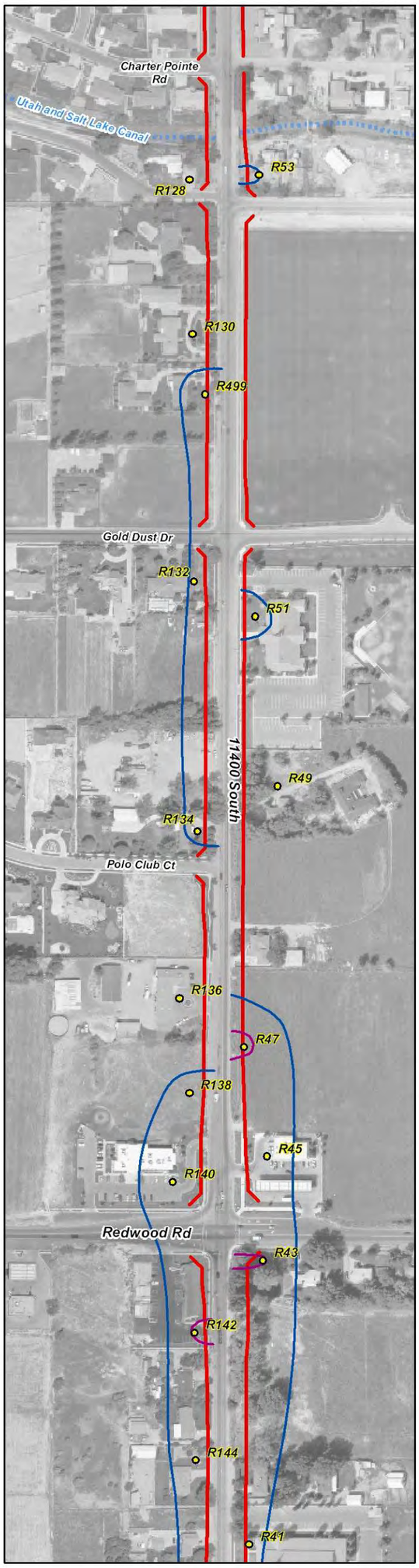
October 2004

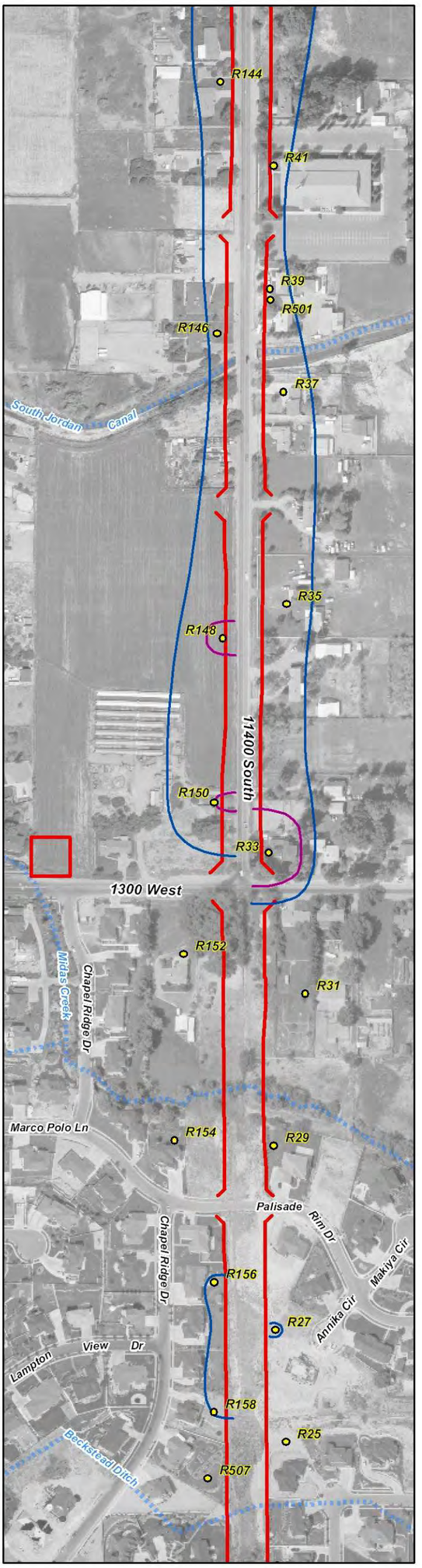
Appendix H-4b.
Alternative 4 Noise Contours

10400 South: River Front Parkway to Jordan Gateway

11400 SOUTH


Panel 1
Panel 2
Panel 3
Bangerter Hwy
3800 West
3600 West
11400 South
Lucas Ln
Tara Woods Ln
Utah Lake
Distributing Canal
2700 West
2820 W
2570 W
2510 W
2480 W
2950 W
2200 W
11370 S
11320 S
Chapel Rim Wy
Roanoke Ln
Applegrove Ln
Charter Pointe Rd
Utah and Salt Lake Canal
R75
R93
R73
R95
R71
R97
R69
R99
R67
R101
R502
R103
R105
R65
R107
R109
R85
R83
R87
R81
R89
R79
R91
R77
R63
R116
R118
R61
R120
R59
R122
R124
R57
R126
R55
R128
R53
R130
Alternative 4 Noise Levels
65 dBA
70 dBA
Noise Receptor
Water Course
Alternative Right-of-Way Line
300
0
300
600
Feet
South Jordan
Sandy
Riverton
Draper
Bangerter Hwy
Redwood Rd
State St
700 W
Study Area
Panel Extents
October 2004
Appendix H-4c.
Alternative 4 Noise Contours
11400 South: Bangerter Highway to 2200 West
11400 SOUTH

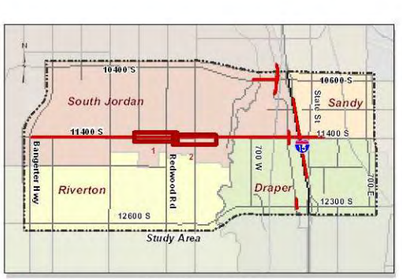




Alternative 4 Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet



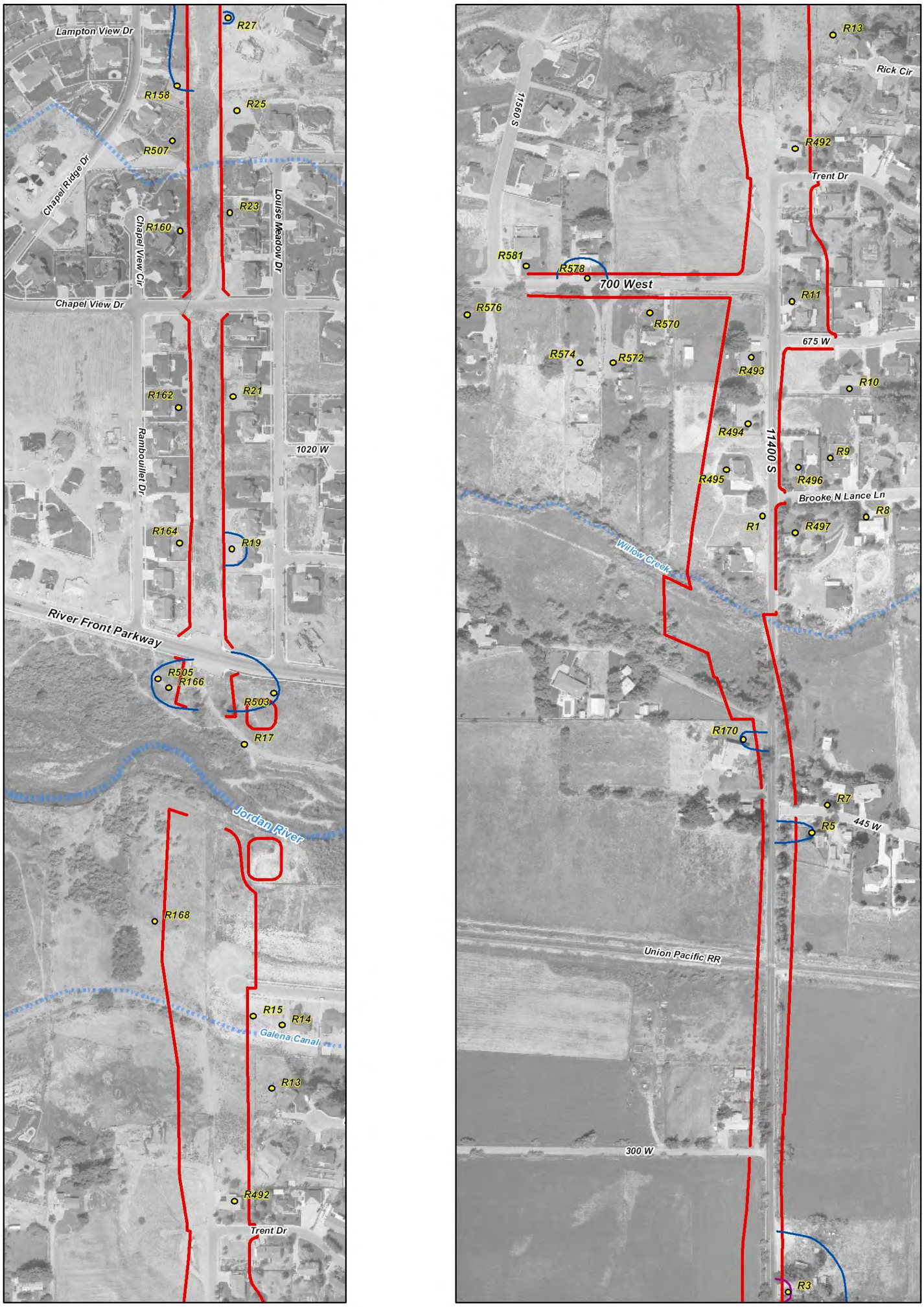
Panel Extents

October 2004

Appendix H-4d.
Alternative 4 Noise Contours

11400 South: 2200 West to Beckstead Ditch

11400 SOUTH



Alternative 4 Noise Levels

65 dBA

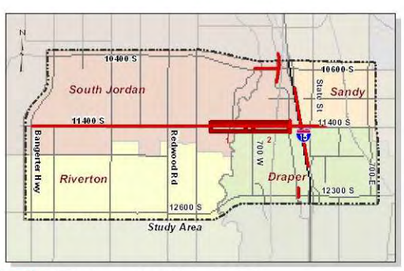
70 dBA

Noise Receptor

Water Course

Alternative Right-of-Way Line

300 0 300 600 Feet



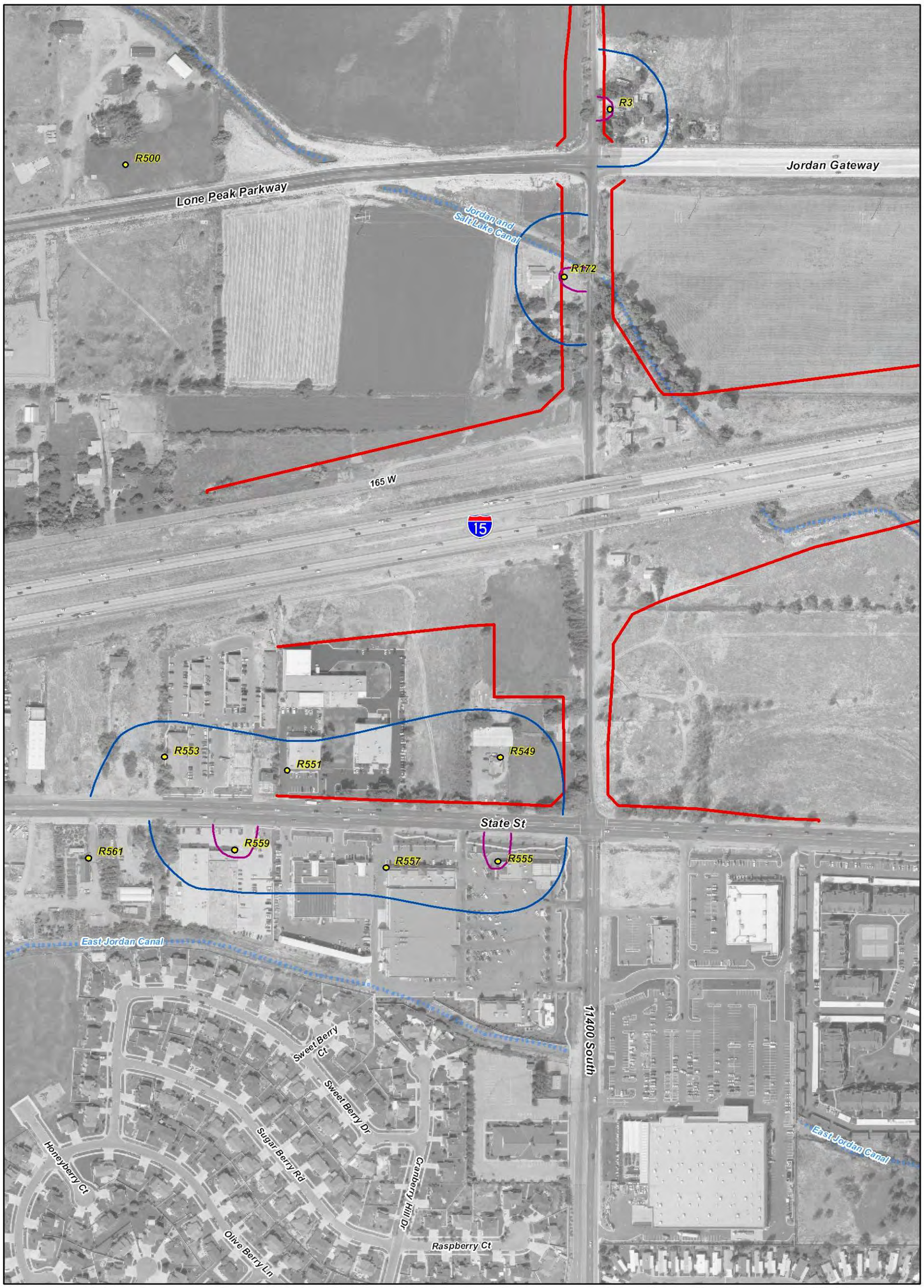
Panel Extents

October 2004

Appendix H-4e.
Alternative 4 Noise Contours

11400 South: Beckstead Ditch to 300 West

11400 SOUTH



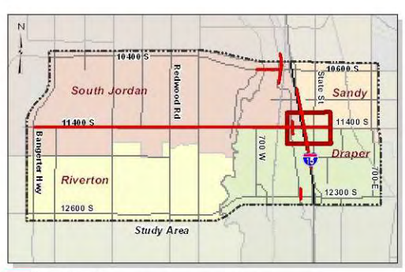
Appendix H-4f.
Alternative 4 Noise Contours

State Street: 11400 South Area

Alternative 4 Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet



Panel Extents

October 2004

11400 SOUTH

Appendix H-4g.
Alternative 4 Noise Contours
11000 South Underpass

Alternative 4 Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet

11400 SOUTH

October 2004

N

10400 South (South Jordan Parkway)

South Jordan

Riverton

Sandy

Draper

10600 South

11400 South

11800 South

12600 South

12300 South

Bangerter Highway

Redwood Road

1300 West

700 West

State Street

Jordan

Gateway

River Front Parkway

Lone Peak Parkway

15

Jordan River

Utah Lake Distribution Canal

Utah and Salt Lake Canal

South Jordan Canal

Becks tead Ditch

Midas Creek

Butterfield Creek

Galena Canal

Willow Creek

Jordan and Salt Lake Canal

East Jordan Canal

0.2 0 0.2 0.4

Miles

Existing Wall/Berm

Proposed Noise Wall

Perennial Streams and Canals

Intermittent Streams and Canals

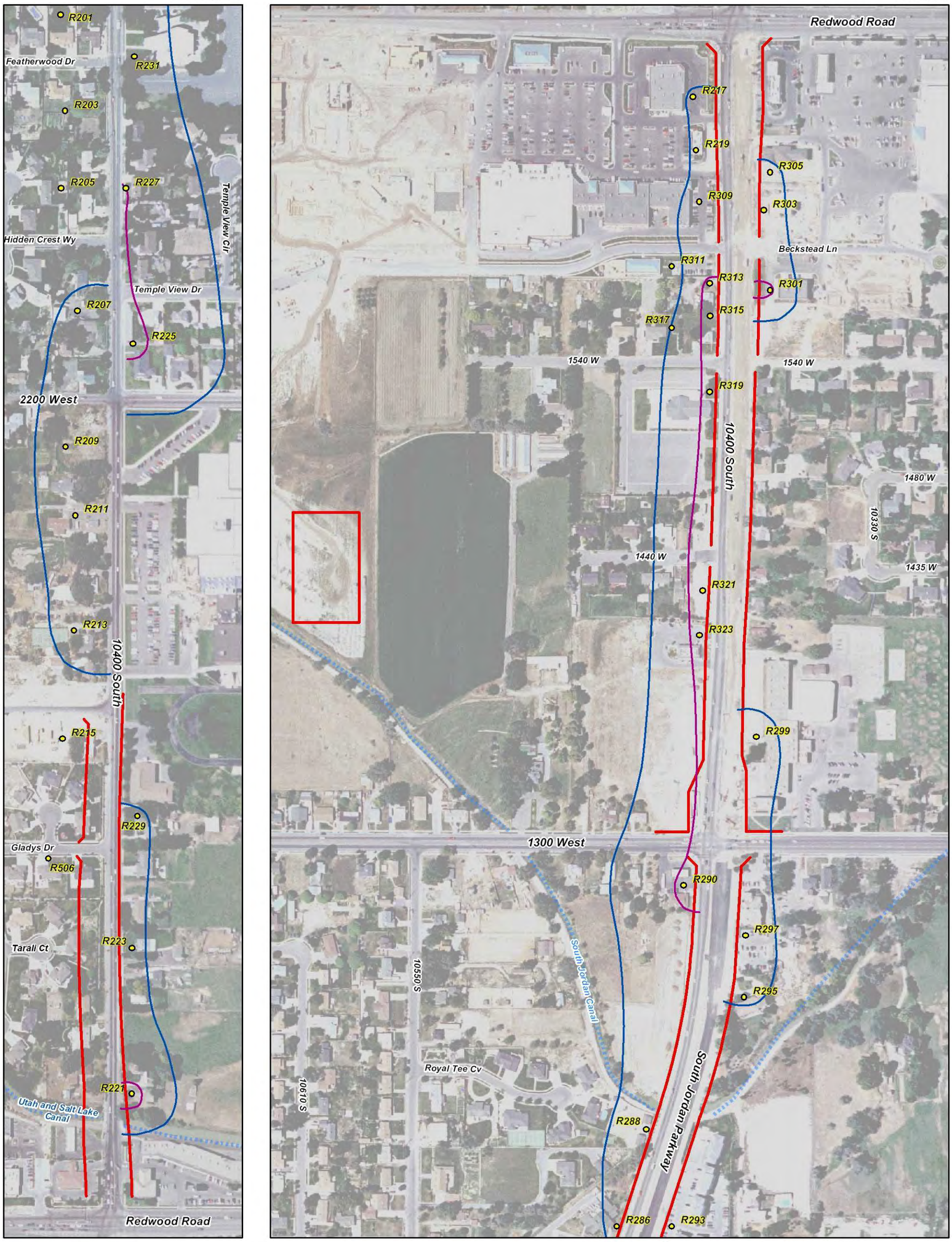
Alternative Right-of-Way Line

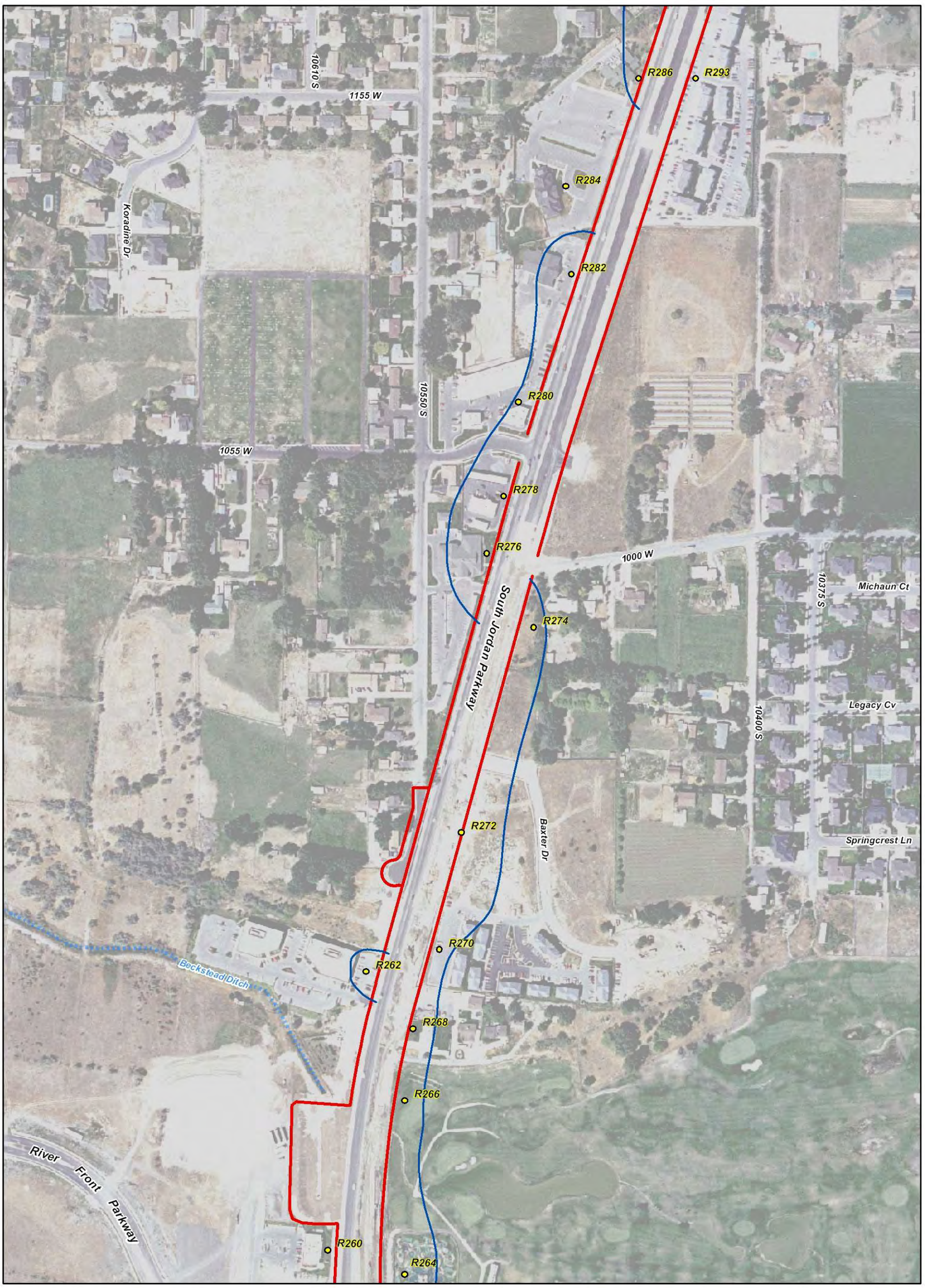
City Boundary

11400 SOUTH

Environmental Impact Statement

Appendix H-5a. Alternative 7 Proposed and Existing Noise Walls


Panel 1
Panel 2
R201
Featherwood Dr
R231
R203
R205
R227
Temple View Cir
Hidden Crest Wy
Temple View Dr
R207
R225
2200 West
R209
R211
R213
10400 South
R215
R229
Gladys Dr
R506
Tarali Ct
R223
R221
Utah and Salt Lake Canal
Redwood Road
R217
R219
R305
R309
R303
Beckstead Ln
R311
R313
R301
R315
R317
1540 W
1540 W
R319
10400 South
1480 W
10330 S
1440 W
1435 W
R321
R323
R299
1300 West
R290
R297
South Jordan Canal
10550 S
R295
Royal Tee Cv
10610 S
South Jordan Parkway
R288
R286
R293
Alternative 7 Noise Levels
65 dBA
70 dBA
Noise Receptor
Water Course
Alternative Right-of-Way Line
300
0
300
600
Feet
South Jordan
Sandy
Riverton
Draper
Study Area
Panel Extents
October 2004
Appendix H-5b.
Alternative 7 Noise Contours
10400 South: Redwood Road to 1300 West
11400 SOUTH



Alternative 7 Noise Levels

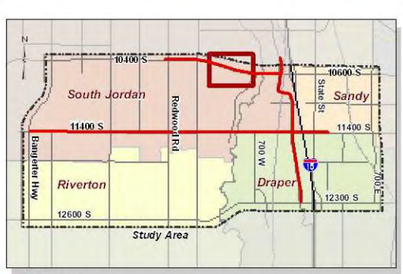
- 65 dBA
- 70 dBA

Noise Receptor

Water Course

Alternative Right-of-Way Line

300 0 300 600 Feet

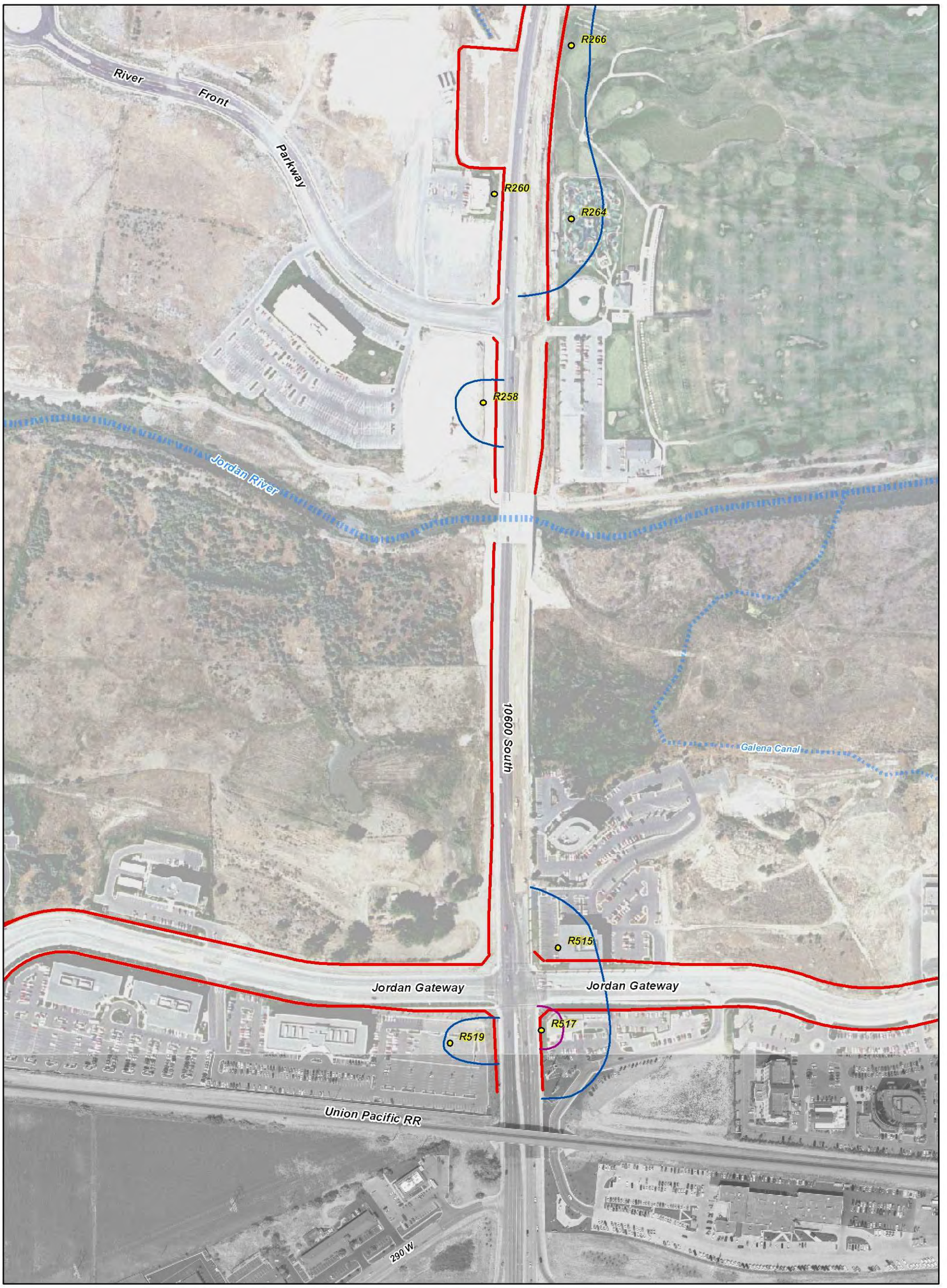


October 2004

Appendix H-5c.
Alternative 7 Noise Contours

10400 South: 1300 West
to River Front Parkway

11400 SOUTH



Alternative 7 Noise Levels

- 65 dBA
- 70 dBA

- Noise Receptor
- Water Course
- Alternative Right-of-Way Line

300 0 300 600 Feet

October 2004

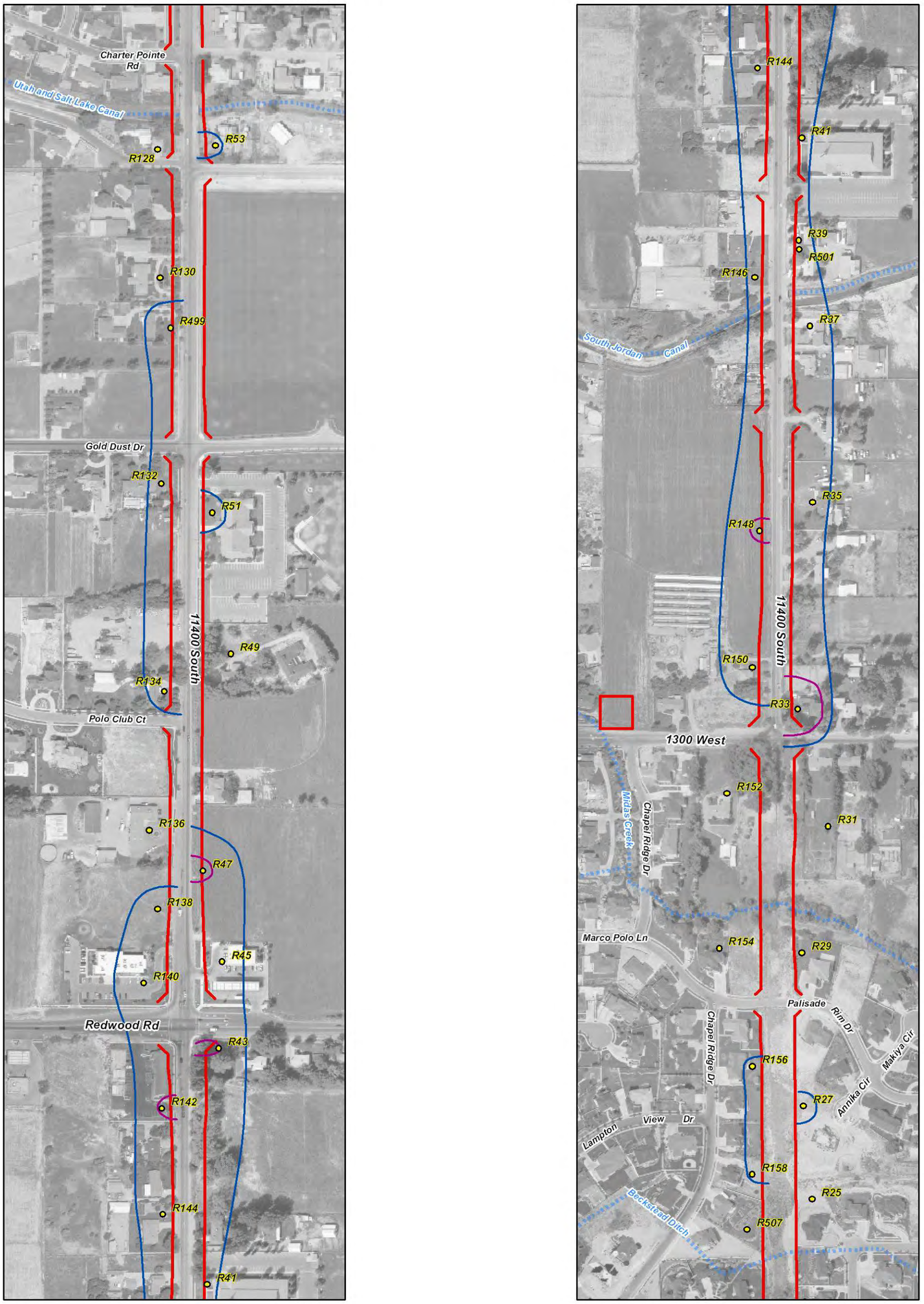
Appendix H-5d.
Alternative 7 Noise Contours
10400 South: River Front Parkway to Jordan Gateway

11400 SOUTH

Appendix H-5e.
Alternative 7 Noise Contours

11400 South: Bangerter Highway to 2200 West

11400 SOUTH



Alternative 7 Noise Levels

65 dBA

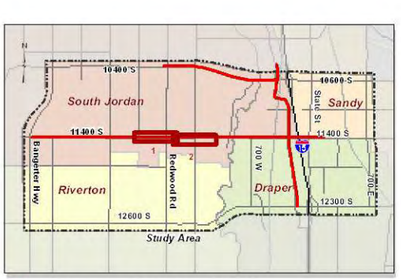
70 dBA

Noise Receptor

Water Course

Alternative Right-of-Way Line

300 0 300 600 Feet

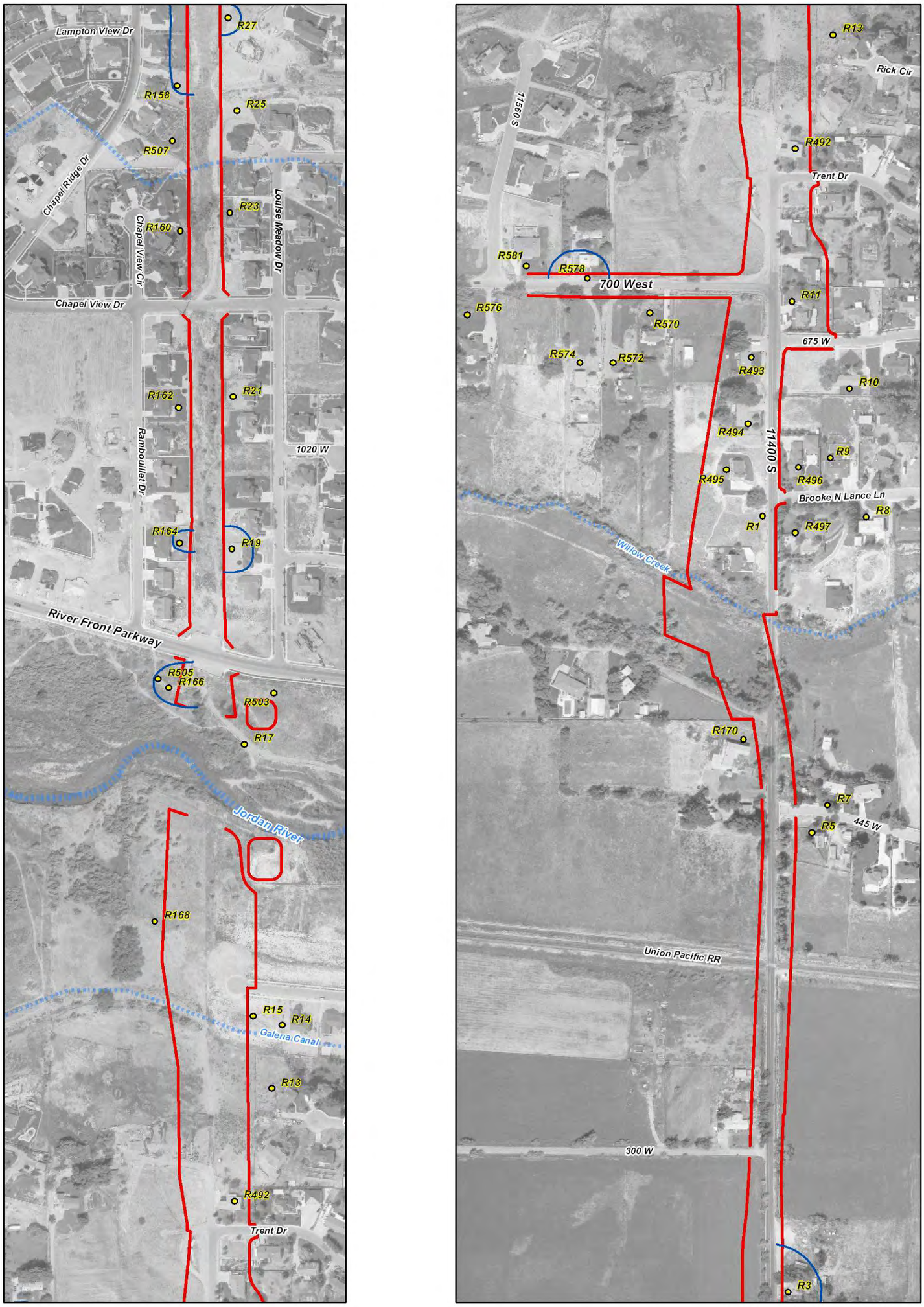


October 2004

Appendix H-5f.
Alternative 7 Noise Contours

11400 South: 2200 West to Beckstead Ditch

11400 SOUTH



Alternative 7 Noise Levels

65 dBA

70 dBA

Noise Receptor

Water Course

Alternative Right-of-Way Line

300 0 300 600 Feet

Panel Extents

October 2004

Appendix H-5g.
Alternative 7 Noise Contours

11400 South: Beckstead Ditch to 300 West

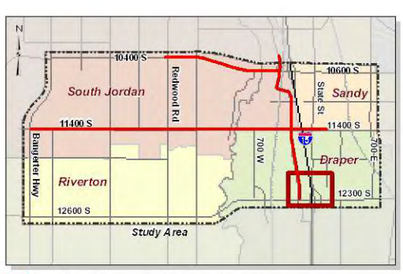
11400 SOUTH

Alternative 7 Noise Levels

- 65 dBA
- 70 dBA

- Noise Receptor
- Water Course
- Alternative Right-of-Way Line

300 0 300 600 Feet



October 2004

Appendix H-5h.
Alternative 7 Noise Contours

12300 South/State Street: 265 West to State Street

11400 SOUTH

Alternative 7 Noise Levels

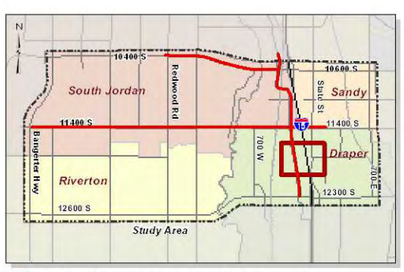
- 65 dBA
- 70 dBA

Noise Receptor

Water Course

Alternative Right-of-Way Line

300 0 300 600 Feet

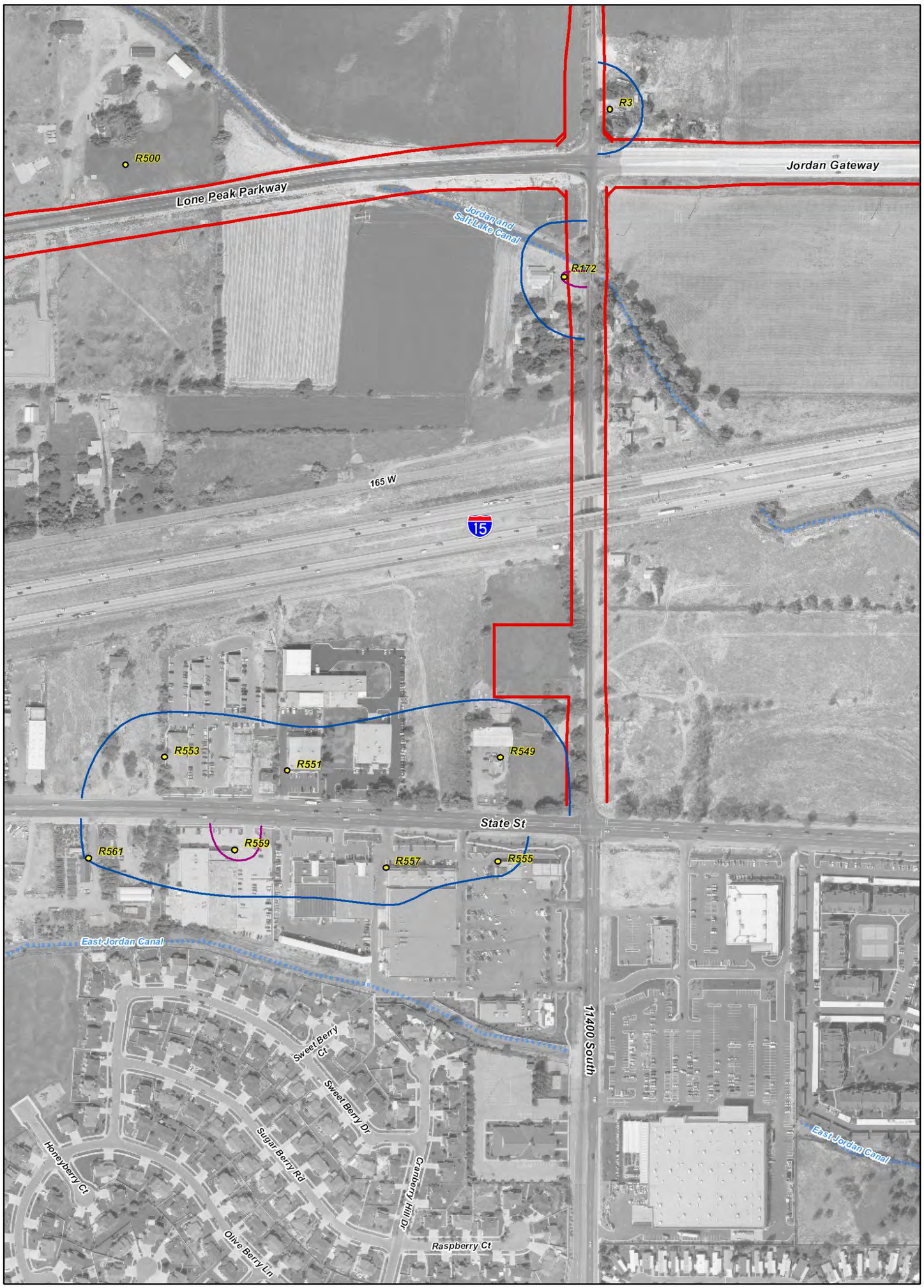


October 2004

Appendix H-5i.
Alternative 7 Noise Contours

State Street and 11800 South Overpass

11400 SOUTH

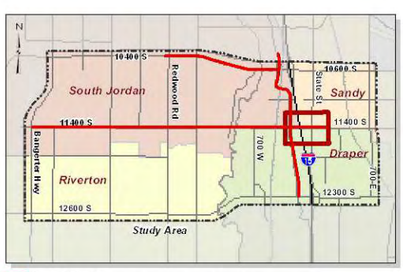


Alternative 7 Noise Levels

- 65 dBA
- 70 dBA

- Noise Receptor
- Water Course
- Alternative Right-of-Way Line

300 0 300 600 Feet



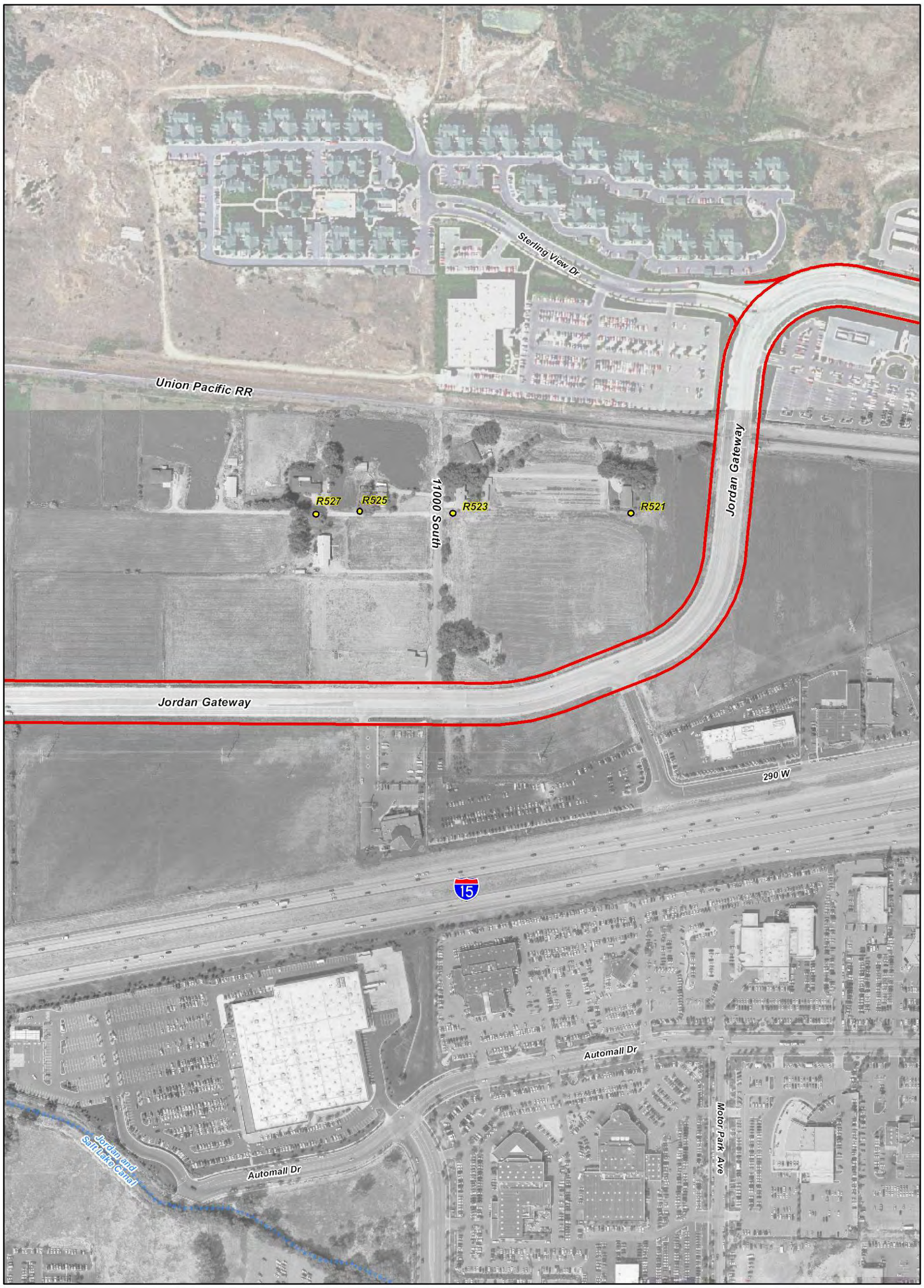
Panel Extents

October 2004

Appendix H-5j.
Alternative 7 Noise Contours

State Street: 11400 South Area

11400 SOUTH

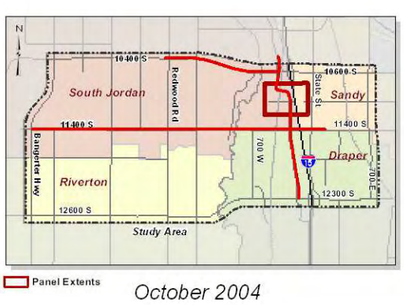


Appendix H-5k.
Alternative 7 Noise Contours
11000 South Underpass

Alternative 7 Noise Levels
- 65 dBA
- 70 dBA

Noise Receptor
Water Course
Alternative Right-of-Way Line

300 0 300 600 Feet



October 2004

11400 SOUTH

APPENDIX D

Determination of Worst Hourly Traffic Noise Conditions

URS

Memorandum

Date: September 14, 2004

To: Mary DeLoretto, 114th South EIS Project Manager

From: Patti Garver, Senior Environmental Engineer

Subject: **Comparison of Level of Service C Versus Level of Service D Noise Levels Calculated Using TNM for the 11400 South EIS**

The Traffic Noise Model was run twice for each Alternative, including the No Build Alternative, to determine the worst hourly traffic noise conditions. The model was run once using Level of Service (LOS) C and better traffic volumes; and the model was run again using LOS D and better traffic volumes. The results are attached. The noise levels were very similar for both sets of traffic volumes. Overall, LOS D resulted in greater noise levels (dBA). The differences range from –0.9 dBA to 1.3 dBA, all of which are imperceptible to the human ear. The greatest individual difference of 1.3 dBA occurred at R168 for Alternative 1 (57.9 dBA (LOS C) vs. 56.6 dBA (LOS D)); this receiver is located on the south side of 11400 South east of the Jordan River away from any dwelling units and does not require noise abatement as it will be within the UDOT right-of-way for 11400 South. **For the EIS document, LOS D noise levels were used for all receivers for each alternative with the exception of one receiver in Alternative 3. Receiver 464 for Alternative 3 measured 65.1 dBA using LOS C and 64.8 dBA using LOS D.** This receiver represents two residences on 12300 South at approximately 1500 West. Both residences have direct access to 12300 South and, therefore, cannot be mitigated using a noise barrier.

11400 S. EIS Noise Receivers
No Build Alternative
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R1	65.5	65.5	0.0
R3	69	69.1	-0.1
R5	59.3	59.5	-0.2
R7	56.7	56.9	-0.2
R8	52.3	52.6	-0.3
R9	53.5	53.8	-0.3
R10	53.6	53.8	-0.2
R11	64.6	64.6	0.0
R13	47.4	47.6	0.0
R14	47	47.3	0.0
R15	46.8	47.1	0.0
R17	49.9	50	-0.1
R19	48.7	48.9	-0.2
R21			0.0
R23			0.0
R25			0.0
R27			0.0
R29			0.0
R31	56.7	56.7	0.0
R33	68.8	68.8	0.0
R35	60.5	60.5	0.0
R37	61.1	61.1	0.0
R39	63.9	63.9	0.0
R41	62.7	62.7	0.0
R43	69.8	69.8	0.0
R45	65.7	65.7	0.0
R47	71.2	71.2	0.0
R49	60.6	60.6	0.0
R51	67.8	67.8	0.0
R53	63.1	63.1	0.0
R55	60	60	0.0
R57	67.5	67.5	0.0
R59	62.7	62.7	0.0
R61	60	60	0.0
R63	60.5	60.5	0.0
R65	60	60	0.0
R67	54.6	54.6	0.0
R69	63	63	0.0
R71	58.5	58.5	0.0
R73	58.7	58.7	0.0

11400 S. EIS Noise Receivers
No Build Alternative
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R75	57.2	57.2	0.0
R77	60.8	60.8	0.0
R79	56.6	56.6	0.0
R81	57.9	57.9	0.0
R83	60.7	60.7	0.0
R85	62.6	62.6	0.0
R87	61.2	61.2	0.0
R89	57.2	57.2	0.0
R91	60.3	60.3	0.0
R93	55.5	55.5	0.0
R95	55.1	55.1	0.0
R97	56.9	56.9	0.0
R99	61.3	61.3	0.0
R101	63.2	63.2	0.0
R103	63.2	63.2	0.0
R105	66	66	0.0
R107	59.3	59.3	0.0
R109	65.1	65.1	0.0
R114	64.1	64.1	0.0
R116	68.2	68.2	0.0
R118	62.2	62.2	0.0
R120	64.3	64.3	0.0
R122	63.3	63.3	0.0
R124	55.9	56	-0.1
R126	57.5	57.5	0.0
R128	57.2	57.2	0.0
R130	58	58	0.0
R132	60	60	0.0
R134	61.1	61.1	0.0
R136	59.3	59.3	0.0
R138	62.5	62.5	0.0
R140	70	70	0.0
R142	65.5	65.5	0.0
R144	59.6	59.6	0.0
R146	56.3	56.3	0.0
R148	60	60	0.0
R150	63.1	63.2	-0.1
R152	59.4	59.4	0.0
R154			0.0
R156			0.0

11400 S. EIS Noise Receivers
No Build Alternative
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R158			0.0
R160			0.0
R162			0.0
R164	48.8	48.9	-0.1
R166	54.4	54.5	-0.1
R168	45.8	46	-0.2
R170	60.6	60.7	-0.1
R172	67.2	67.8	-0.6
R174	65.6	65.6	0.0
R176	68.3	68.3	0.0
R178	65	65	0.0
R180	55.3	55.3	0.0
R182	56.2	56.2	0.0
R184	56.9	56.9	0.0
R186	61.6	61.6	0.0
R188	64	64	0.0
R193	70	70	0.0
R195	67.6	67.6	0.0
R197	66.1	66.1	0.0
R199	66	66	0.0
R201	60.7	60.7	0.0
R203	62.8	62.8	0.0
R205	62.4	62.4	0.0
R207	67.8	67.8	0.0
R209	66	66	0.0
R211	68	68	0.0
R213	64	64	0.0
R215	60.6	60.6	0.0
R217	62.7	62	0.7
R219	61.4	60.5	0.9
R221	71.3	71.3	0.0
R223	68.1	68.1	0.0
R225	70.4	70.4	0.0
R227	69.2	69.2	0.0
R229	66.5	66.5	0.0
R231	66.8	66.7	0.1
R233	66	66	0.0
R235	67.4	67.4	0.0
R237	67.7	67.7	0.0
R239	68.7	68.7	0.0

11400 S. EIS Noise Receivers
No Build Alternative
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R241	70.9	70.9	0.0
R243	64.7	64.7	0.0
R245	63.4	63.4	0.0
R247	63.8	63.8	0.0
R249	63.3	63.3	0.0
R251	63.9	63.9	0.0
R253	65.8	65.8	0.0
R258	67.1	67.1	0.0
R260	66.2	66.2	0.0
R262	62.5	62.5	0.0
R264	66	66	0.0
R266	67	67	0.0
R268	67.5	67.5	0.0
R270	68.5	68.5	0.0
R272	70.3	70.3	0.0
R274	65.8	65.8	0.0
R276	67	67	0.0
R278	67.1	67.1	0.0
R280	64.3	64.3	0.0
R282	67.3	67.3	0.0
R284	60.2	60.2	0.0
R286	68	68	0.0
R288	65.6	65.6	0.0
R290	70.1	70.1	0.0
R293	67	67	0.0
R295	66.3	66.3	0.0
R297	68	68	0.0
R299	65.5	65.6	-0.1
R301	62.4	62.1	0.3
R303	64.2	63.7	0.5
R305	63.5	62.8	0.7
R309	61.1	60.6	0.5
R311	56.1	56.1	0.0
R313	62.7	62.5	0.2
R315	62.9	62.6	0.3
R317	55.9	55.9	0.0
R319	63.2	63	0.2
R321	63.2	62.9	0.3
R323	63.4	63	0.4
R325	65.4	65.4	0.0

11400 S. EIS Noise Receivers
No Build Alternative
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R327	65.4	65.4	0.0
R331	65.9	65.9	0.0
R333	66.7	66.7	0.0
R335	67.5	67.5	0.0
R337	66.5	66.5	0.0
R339	65.5	65.5	0.0
R341	66.2	66.2	0.0
R343	68.3	68.3	0.0
R345	68.9	68.9	0.0
R347	65.3	65.3	0.0
R349	65.7	65.7	0.0
R351	60.8	60.8	0.0
R353	67.4	67.4	0.0
R355	72.2	72.2	0.0
R357	67.7	67.7	0.0
R359	66.6	66.6	0.0
R361	64.7	64.7	0.0
R363	66.1	66.1	0.0
R365	64.5	64.5	0.0
R367	65.5	65.5	0.0
R369	66	66	0.0
R371	65.9	65.9	0.0
R373	64.3	64.3	0.0
R375	64.6	64.6	0.0
R377	63.7	63.7	0.0
R379	63.4	63.4	0.0
R381	63.7	63.7	0.0
R383	66.3	66.3	0.0
R385	66.5	66.5	0.0
R387	59.3	59.3	0.0
R389	65.4	65.4	0.0
R391	64.3	64.3	0.0
R395	66.7	66.7	0.0
R397	62.4	62.4	0.0
R399	64.2	64.2	0.0
R401	69	69.6	-0.6
R403	65.2	65.3	-0.1
R405	68.9	69.5	-0.6
R407	67.7	67.7	0.0
R409	69.2	69.2	0.0

11400 S. EIS Noise Receivers
No Build Alternative
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R411	67.6	67.6	0.0
R413	65.7	65.7	0.0
R415	66	66	0.0
R417	67	67	0.0
R419	66.9	66.9	0.0
R421	69.1	69.1	0.0
R423	69.3	69.3	0.0
R425	71.7	71.7	0.0
R427	69.1	69.1	0.0
R429	65.1	65.1	0.0
R431	66.2	66.3	-0.1
R433	62	62	0.0
R435	66.1	66.1	0.0
R437	68.9	68.9	0.0
R439	65.4	65.4	0.0
R441	63.7	63.7	0.0
R443	63.5	63.5	0.0
R445	60.8	60.8	0.0
R447	60.9	61	-0.1
R449	65.2	65.2	0.0
R452	69.2	69.2	0.0
R454	64.5	64.5	0.0
R456	67.6	67.7	-0.1
R458	70.4	70.6	-0.2
R460	68.4	68.8	-0.4
R462	68.4	68.6	-0.2
R464	66.1	66.1	0.0
R466	65.1	65.1	0.0
R468	64.9	64.8	0.1
R470	69.9	70.3	-0.4
R472	69.5	69.6	-0.1
R474	68.9	68.9	0.0
R476	66.2	66.2	0.0
R478	66.4	66.5	-0.1
R480	67.4	67.4	0.0
R482	66	66	0.0
R484	69.4	69.5	-0.1
R486	67.1	67.1	0.0
R488	66.2	66.2	0.0
R490	65.1	65.1	0.0

11400 S. EIS Noise Receivers
No Build Alternative
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R492	55.3	55.4	-0.1
R493	61.9	61.9	0.0
R494	60.9	61	-0.1
R495	57.1	57.3	-0.2
R496	60.5	60.6	-0.1
R497	61.3	61.3	0.0
R499	61.9	61.9	0.0
R500	61.6	61.9	-0.3
R501	63.6	63.6	0.0
R502	57.6	57.6	0.0
R503	60	60	0.0
R505	55.8	55.8	0.0
R506	59	59	0.0
R507			0.0
R509	62.1	62.1	0.0
R511	57.9	57.9	0.0
R513	58.5	58.5	0.0
R515	69.5	69.6	-0.1
R517	70.2	71.1	-0.9
R519	66.2	66.7	-0.5
R521	61.8	62.3	-0.5
R523	61.2	61.8	-0.6
R525	60.1	60.7	-0.6
R527	59.9	60.4	-0.5
R529	65.8	65.9	-0.1
R531	61	61.1	-0.1
R533	58.9	59.2	-0.3
R535	61.6	61.8	-0.2
R537	66.9	67.1	-0.2
R539	60.4	60.8	-0.4
R541	57.9	58.4	-0.5
R543	57.5	57.9	-0.4
R545	59.4	59.6	-0.2
R547	67.9	68	-0.1
R549	67.7	68.1	-0.4
R551	66.8	67.2	-0.4
R553	68.5	68.9	-0.4
R555	68.8	69.1	-0.3
R557	67.3	67.7	-0.4
R559	69.6	70	-0.4

11400 S. EIS Noise Receivers
No Build Alternative
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R561	63.7	64.1	-0.4
R563	61.4	61.4	0.0
R564	61.2	61.2	0.0
R565	60.6	60.6	0.0
R570	61.3	61.3	0.0
R572	54.8	55	-0.2
R574	54.5	54.5	0.0
R576	60.3	60.4	-0.1
R578	70.3	70.3	0.0
R581	64.5	64.5	0.0

11400 S. EIS Noise Receivers
Alternative 1
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 1 (dB)	Alt 1 (dB)	(dB)
R1	59.5	59.6	-0.1
R3	68.1	68.3	-0.2
R5	63.9	64.0	-0.1
R7	61.1	61.2	-0.1
R8	56.0	56.2	-0.2
R9	56.4	56.5	-0.1
R10	57.4	57.4	0
R11	63.5	63.4	0.1
R13	57.0	56.7	0.3
R14	56.1	55.7	0.4
R15	56.5	56.3	0.2
R17	64.0	63.2	0.8
R19	68.2	68.1	0.1
R21	60.9	60.9	0
R23	59.3	59.3	0
R25	62.7	62.7	0
R27	66.8	66.8	0
R29	62.6	62.6	0
R31	63.6	63.6	0
R33	73.3	73.3	0
R35	67.4	67.4	0

11400 S. EIS Noise Receivers
Alternative 1
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 1 (dB)	Alt 1 (dB)	(dB)
R37	67.5	67.5	0
R39	68.4	68.4	0
R41	68.2	68.2	0
R43	70.7	70.7	0
R45	68.4	68.4	0
R47	70.2	70.2	0
R49	62.0	62.0	0
R51	66.0	66.0	0
R53	65.3	65.3	0
R55	61.5	61.5	0
R57	66.6	66.6	0
R59	63.8	63.8	0
R61	60.7	60.7	0
R63	62.7	62.7	0
R65	66.3	66.3	0
R67	59.2	59.2	0
R69	64.9	64.9	0
R71	63.0	63.0	0
R73	65.1	65.1	0
R75	64.9	64.9	0
R77	65.8	65.8	0
R79	61.9	61.9	0
R81	63.4	63.4	0
R83	63.9	63.9	0
R85	63.5	63.5	0
R87	65.4	65.4	0
R89	62.1	62.1	0
R91	63.0	63.0	0
R93	57.1	57.1	0
R95	57.7	57.7	0
R97	59.4	59.4	0
R99	64.4	64.4	0
R101	65.0	65.0	0
R103	64.9	64.9	0
R105	67.0	67.0	0
R107	62.8	62.8	0
R109	66.3	66.3	0
R114	67.8	67.8	0
R116	68.8	68.8	0
R118	64.5	64.5	0
R120	65.9	65.9	0
R122	65.7	65.7	0

11400 S. EIS Noise Receivers
Alternative 1
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 1 (dB)	Alt 1 (dB)	(dB)
R124	59.3	59.3	0
R126	63.4	63.4	0
R128	64.2	64.2	0
R130	64.3	64.3	0
R132	59.0	59.0	0
R134	58.0	58.0	0
R136	61.2	61.2	0
R138	65.0	65.0	0
R140	69.6	69.6	0
R142	70.2	70.2	0
R144	66.5	66.5	0
R146	66.6	66.6	0
R148	61.0	61.0	0
R150	66.1	66.1	0
R152	65.0	65.0	0
R154	57.8	57.8	0
R156	67.0	67.0	0
R158	66.8	66.8	0
R160	60.7	60.6	0.1
R162	60.9	60.9	0
R164	65.9	65.9	0
R166	66.6	66.4	0.2
R168	57.9	56.6	1.3
R170	66.2	66.2	0
R172	68.9	68.8	0.1
R174	67.7	67.7	0
R176	69.5	69.5	0
R178	60.6	60.6	0
R180	54.5	54.5	0
R182	55.5	55.5	0
R184	57.8	57.8	0
R186	63.2	63.2	0
R188	66.4	66.4	0
R193	71.3	71.3	0
R195	70.0	70.0	0
R197	66.6	66.6	0
R199	66.6	66.6	0
R201	62.4	62.4	0
R203	65.3	65.3	0
R205	65.3	65.3	0
R207	68.8	68.9	-0.1
R209	68.8	68.8	0

11400 S. EIS Noise Receivers
Alternative 1
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 1 (dB)	Alt 1 (dB)	(dB)
R211	69.8	69.8	0
R213	66.9	66.9	0
R215	65.1	65.1	0
R217	65.9	66.0	-0.1
R219	65.5	65.6	-0.1
R221	71.6	71.6	0
R223	68.1	68.2	-0.1
R225	71.6	71.6	0
R227	72.2	72.2	0
R229	67.1	67.1	0
R231	68.5	68.5	0
R233	68.2	68.2	0
R235	69.2	69.2	0
R237	69.5	69.5	0
R239	70.5	70.5	0
R241	72.4	72.4	0
R243	67.4	67.4	0
R245	63.0	63.0	0
R247	64.3	64.4	-0.1
R249	63.9	63.9	0
R251	64.0	64.0	0
R253	66.1	66.1	0
R258	70.4	70.4	0
R260	65.8	65.8	0
R262	66.0	66.0	0
R264	68.2	68.2	0
R266	67.6	67.6	0
R268	67.6	67.6	0
R270	68.1	68.1	0
R272	66.0	66.0	0
R274	61.6	61.6	0
R276	68.1	68.1	0
R278	68.6	68.6	0
R280	66.5	66.5	0
R282	68.1	68.1	0
R284	62.9	62.9	0
R286	67.9	67.9	0
R288	65.9	65.9	0
R290	71.6	71.7	-0.1
R293	67.8	67.8	0
R295	68.2	68.2	0
R297	69.8	69.8	0

11400 S. EIS Noise Receivers
Alternative 1
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 1 (dB)	Alt 1 (dB)	(dB)
R299	70.1	70.3	-0.2
R301	71.5	71.5	0
R303	69.1	69.1	0
R305	67.7	67.7	0
R309	66.7	66.6	0.1
R311	65.4	65.4	0
R313	72.1	72.2	-0.1
R315	72.3	72.5	-0.2
R317	66.2	66.3	-0.1
R319	73.0	73.1	-0.1
R321	72.9	73.1	-0.2
R323	72.1	72.4	-0.3
R325	65.0	65.0	0
R327	64.7	64.7	0
R331	64.6	64.6	0
R333	65.6	65.6	0
R335	67.2	67.2	0
R337	66.6	66.6	0
R339	65.4	65.4	0
R341	66.1	66.1	0
R343	67.2	67.2	0
R345	67.9	67.9	0
R347	65.9	65.9	0
R349	67.6	67.6	0
R351	62.6	62.6	0
R353	67.2	67.2	0
R355	72.5	72.5	0
R357	69.1	69.1	0
R359	68.4	68.4	0
R361	66.2	66.2	0
R363	66.7	66.7	0
R365	65.6	65.6	0
R367	66.5	66.5	0
R369	66.9	66.9	0
R371	66.9	66.9	0
R373	65.6	65.6	0
R375	65.8	65.8	0
R377	65.0	65.0	0
R379	64.9	64.9	0
R381	64.9	64.9	0
R383	67.5	67.5	0
R385	67.2	67.2	0

11400 S. EIS Noise Receivers
Alternative 1
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 1 (dB)	Alt 1 (dB)	(dB)
R387	62.9	62.9	0
R389	68.4	68.4	0
R391	66.0	66.0	0
R395	67.6	67.6	0
R397	64.0	64.0	0
R399	66.5	66.5	0
R401	69.3	70.0	-0.7
R403	64.4	64.6	-0.2
R405	69.4	70.0	-0.6
R407	67.1	67.2	-0.1
R409	67.0	67.0	0
R411	65.5	65.6	-0.1
R413	67.3	67.3	0
R415	69.3	69.3	0
R417	70.9	70.9	0
R419	69.3	69.3	0
R421	69.7	69.7	0
R423	68.4	68.4	0
R425	68.9	68.9	0
R427	67.6	67.6	0
R429	67.1	67.1	0
R431	64.0	64.0	0
R433	61.2	61.2	0
R435	65.0	65.0	0
R437	67.0	67.0	0
R439	66.3	66.3	0
R441	65.3	65.3	0
R443	62.8	62.8	0
R445	60.0	60.0	0
R447	57.6	57.6	0
R449	63.0	63.0	0
R452	70.6	70.6	0
R454	66.5	66.5	0
R456	68.8	68.8	0
R458	71.1	71.1	0
R460	65.1	65.1	0
R462	65.7	65.7	0
R464	64.9	64.9	0
R466	65.1	65.1	0
R468	67.1	67.1	0
R470	66.9	66.9	0
R472	70.0	70.0	0

11400 S. EIS Noise Receivers
Alternative 1
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 1 (dB)	Alt 1 (dB)	(dB)
R474	70.2	70.2	0
R476	68.3	68.3	0
R478	69.1	69.1	0
R480	69.6	69.6	0
R482	68.2	68.2	0
R484	70.1	70.1	0
R486	69.8	69.8	0
R488	67.2	67.2	0
R490	65.7	65.7	0
R492	61.9	61.7	0.2
R493			0
R494			0
R495			0
R496	64.2	64.1	0.1
R497	63.4	63.4	0
R499	66.7	66.7	0
R500	61.2	61.6	-0.4
R501	68.1	68.1	0
R502	61.5	61.5	0
R503	65.2	65.0	0.2
R505	65.5	65.3	0.2
R506	64.2	64.2	0
R507	65.6	65.6	0
R509	64.7	64.7	0
R511	59.6	59.6	0
R513	59.8	59.8	0
R515	69.8	69.8	0
R517	68.0	67.6	0.4
R519	65.5	65.5	0
R521	62.2	62.8	-0.6
R523	61.4	61.9	-0.5
R525	60.9	61.5	-0.6
R527	60.6	61.1	-0.5
R529	65.6	65.8	-0.2
R531	61.2	61.5	-0.3
R533	59.4	59.8	-0.4
R535	61.8	62.1	-0.3
R537	66.9	67.1	-0.2
R539	60.3	60.7	-0.4
R541	58.1	58.5	-0.4
R543	57.7	58.2	-0.5
R545	59.5	59.8	-0.3

11400 S. EIS Noise Receivers
Alternative 1
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 1 (dB)	Alt 1 (dB)	(dB)
R547	67.7	67.7	0
R549	67.9	68.3	-0.4
R551	67.8	68.2	-0.4
R553	69.4	69.9	-0.5
R555	69.2	69.5	-0.3
R557	67.8	68.2	-0.4
R559	69.8	70.3	-0.5
R561	66.0	66.4	-0.4
R563	63.5	63.5	0
R564	63.3	63.3	0
R565	63.4	63.4	0
R570	62.1	62.1	0
R572	58.6	58.7	-0.1
R574	57.1	57.1	0
R576	60.6	60.6	0
R578	69.5	69.5	0
R581	63.9	64.0	-0.1

11400 S. EIS Noise Receivers
Alternative 3
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 3 (dB)	Alt 3 (dB)	(dB)
R1	62	62	0.0
R3	67.4	67.5	-0.1
R5	55.9	56.2	-0.3
R7	54.3	54.7	-0.4
R8	51.2	51.7	-0.5
R9	52.1	52.5	-0.4
R10	52.2	52.5	-0.3
R11	62.2	62.2	0.0
R13			0.0
R14			0.0
R15			0.0
R17	49.9	50	-0.1
R19	48.9	49.1	-0.2
R21			0.0

11400 S. EIS Noise Receivers
Alternative 3
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 3 (dB)	Alt 3 (dB)	(dB)
R23			0.0
R25			0.0
R27			0.0
R29			0.0
R31	56.2	56.8	-0.6
R33	68.9	69	-0.1
R35	61.1	61.1	0.0
R37	61.7	61.7	0.0
R39	64.4	64.4	0.0
R41	63.4	63.4	0.0
R43	69.5	69.5	0.0
R45	65.1	65.1	0.0
R47	70.2	70.2	0.0
R49	60.2	60.2	0.0
R51	67	67	0.0
R53	62.8	62.8	0.0
R55	59.8	59.8	0.0
R57	66.9	66.9	0.0
R59	62.5	62.5	0.0
R61	60.1	60.1	0.0
R63	60.7	60.7	0.0
R65	61.7	61.7	0.0
R67	56	56	0.0
R69	64.6	64.6	0.0
R71	60.1	60.1	0.0
R73	60.4	60.4	0.0
R75	58.9	58.9	0.0
R77	62.5	62.5	0.0
R79	58.1	58.1	0.0
R81	58.8	58.8	0.0
R83	60	60	0.0
R85	60.6	60.6	0.0
R87	61.6	61.6	0.0
R89	57.6	57.6	0.0
R91	61.6	61.6	0.0
R93	56.8	56.8	0.0
R95	56.3	56.3	0.0
R97	58.1	58.1	0.0
R99	62.4	62.4	0.0
R101	64.3	64.3	0.0

11400 S. EIS Noise Receivers
Alternative 3
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 3 (dB)	Alt 3 (dB)	(dB)
R103	64.2	64.2	0.0
R105	67	67	0.0
R107	60.3	60.3	0.0
R109	66.3	66.3	0.0
R114	65.1	65.1	0.0
R116	69.4	69.4	0.0
R118	63.2	63.2	0.0
R120	65.5	65.5	0.0
R122	64.5	64.5	0.0
R124	57.1	57.1	0.0
R126	60.6	60.6	0.0
R128	60.2	60.2	0.0
R130	61.3	61.3	0.0
R132	62.4	62.4	0.0
R134	63.7	63.7	0.0
R136	60.7	60.7	0.0
R138	64.4	64.4	0.0
R140	69	69	0.0
R142	68.5	68.5	0.0
R144	62.9	62.9	0.0
R146	59.1	59.1	0.0
R148	63.1	63.1	0.0
R150	65	65	0.0
R152	59	59.2	-0.2
R154			0.0
R156			0.0
R158			0.0
R160			0.0
R162			0.0
R164	49	49.2	-0.2
R166	54.1	54.2	-0.1
R168	45.8	46.1	-0.3
R170	58	58.2	-0.2
R172	68.9	69.2	-0.3
R174	69.5	69.5	0.0
R176	71.3	71.3	0.0
R178	62.6	62.6	0.0
R180	55.3	55.3	0.0
R182	56.2	56.2	0.0
R184	58.9	58.9	0.0

11400 S. EIS Noise Receivers
Alternative 3
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 3 (dB)	Alt 3 (dB)	(dB)
R186	64.4	64.4	0.0
R188	67.7	67.7	0.0
R193	71.4	71.4	0.0
R195	70	70.1	-0.1
R197	67.7	67.7	0.0
R199	67.8	67.8	0.0
R201	63.5	63.5	0.0
R203	65.1	65.1	0.0
R205	64.8	64.8	0.0
R207	69.5	69.5	0.0
R209	68.8	68.8	0.0
R211	69.7	69.7	0.0
R213	66.4	66.4	0.0
R215	64.3	64.3	0.0
R217	65.9	66.2	-0.3
R219	65.6	65.8	-0.2
R221	71.4	71.5	-0.1
R223	67.6	67.6	0.0
R225	71.7	71.7	0.0
R227	70.1	70.1	0.0
R229	66.2	66.2	0.0
R231	67.9	67.9	0.0
R233	67.7	67.7	0.0
R235	68.8	68.8	0.0
R237	69.1	69.1	0.0
R239	70.4	70.4	0.0
R241	74	74	0.0
R243	69.2	69.2	0.0
R245	63.9	63.9	0.0
R247	64.8	64.8	0.0
R249	64.4	64.4	0.0
R251	65.4	65.4	0.0
R253	67.6	67.6	0.0
R258	70.7	70.9	-0.2
R260	66.6	66.7	-0.1
R262	66.6	66.6	0.0
R264	68.8	68.8	0.0
R266	67.2	67.3	-0.1
R268	67.2	67.3	-0.1
R270	67.2	67.3	-0.1

11400 S. EIS Noise Receivers
Alternative 3
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 3 (dB)	Alt 3 (dB)	(dB)
R272	64.8	64.8	0.0
R274	60.9	60.9	0.0
R276	68.7	68.7	0.0
R278	69.1	69.1	0.0
R280	66.8	66.8	0.0
R282	68.4	68.4	0.0
R284	63.1	63.1	0.0
R286	68.7	68.7	0.0
R288	66.4	66.4	0.0
R290	71.7	71.8	-0.1
R293	67.6	67.6	0.0
R295	68.1	68.1	0.0
R297	69.4	69.5	-0.1
R299	70.4	70.5	-0.1
R301	71.6	71.7	-0.1
R303	69.3	69.4	-0.1
R305	68	67.9	0.1
R309	66.8	66.8	0.0
R311	65.4	65.5	-0.1
R313	72.1	72.3	-0.2
R315	72.3	72.6	-0.3
R317	65.9	66.1	-0.2
R319	70.4	70.6	-0.2
R321	72.8	73.1	-0.3
R323	72.2	72.6	-0.4
R325	64.8	64.8	0.0
R327	64.5	64.5	0.0
R331	64.4	64.4	0.0
R333	65.5	65.5	0.0
R335	67	67	0.0
R337	66.5	66.5	0.0
R339	65.3	65.3	0.0
R341	66	66	0.0
R343	67.1	67.1	0.0
R345	67.8	67.8	0.0
R347	65.9	65.9	0.0
R349	67.5	67.5	0.0
R351	62.5	62.5	0.0
R353	67.1	67.1	0.0
R355	72.5	72.5	0.0

11400 S. EIS Noise Receivers
Alternative 3
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 3 (dB)	Alt 3 (dB)	(dB)
R357	69.4	69.5	-0.1
R359	68.7	68.7	0.0
R361	66.4	66.4	0.0
R363	66.3	66.3	0.0
R365	64.9	64.9	0.0
R367	65.9	65.9	0.0
R369	66.3	66.3	0.0
R371	66.3	66.3	0.0
R373	65	65	0.0
R375	65.4	65.4	0.0
R377	64.7	64.7	0.0
R379	64.7	64.7	0.0
R381	64.8	64.8	0.0
R383	67.8	67.8	0.0
R385	67.5	67.5	0.0
R387	62.5	62.5	0.0
R389	68.4	68.4	0.0
R391	64.8	64.8	0.0
R395	67.6	67.6	0.0
R397	63.8	63.8	0.0
R399	66.7	66.7	0.0
R401	69.3	70	-0.7
R403	64.9	65.1	-0.2
R405	69.5	70.1	-0.6
R407	67.2	67.2	0.0
R409	66.7	66.8	-0.1
R411	65.2	65.2	0.0
R413	67.3	67.3	0.0
R415	69.6	69.6	0.0
R417	71.3	71.3	0.0
R419	69.9	69.9	0.0
R421	70.4	70.4	0.0
R423	69.1	69.1	0.0
R425	69.6	69.6	0.0
R427	68.3	68.3	0.0
R429	67.7	67.7	0.0
R431	64.7	64.7	0.0
R433	61.8	61.8	0.0
R435	65.7	65.7	0.0
R437	67.6	67.6	0.0

11400 S. EIS Noise Receivers
Alternative 3
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 3 (dB)	Alt 3 (dB)	(dB)
R439	67	66.9	0.1
R441	65.9	65.9	0.0
R443	63.4	63.4	0.0
R445	60.7	60.7	0.0
R447	64.1	64.1	0.0
R449	63.5	63.5	0.0
R452	71.3	71.3	0.0
R454	66.8	66.6	0.2
R456	69.5	69.5	0.0
R458	71.2	71.1	0.1
R460	65.3	65	0.3
R462	65.9	65.6	0.3
R464	**65.1**	64.8	0.3
R466	65.3	65.2	0.1
R468	67.5	67.8	-0.3
R470	67.3	66.6	0.7
R472	70.4	70.5	-0.1
R474	70.1	70.1	0.0
R476	68.2	68.2	0.0
R478	68.9	68.9	0.0
R480	69.5	69.5	0.0
R482	68.1	68.1	0.0
R484	70	70	0.0
R486	69.6	69.6	0.0
R488	67	67	0.0
R490	65.5	65.5	0.0
R492	53.4	53.6	-0.2
R493	59	59.1	-0.1
R494	58.5	58.6	-0.1
R495	55.5	55.8	-0.3
R496	58.1	58.2	-0.1
R497	58.5	58.6	-0.1
R499	65.6	65.6	0.0
R500	63.4	63.7	-0.3
R501	64.1	64.1	0.0
R502	57.9	57.9	0.0
R503	59.4	59.4	0.0
R505	55.5	55.5	0.0
R506	46.2	46.6	-0.4
R507			0.0

11400 S. EIS Noise Receivers
Alternative 3
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 3 (dB)	Alt 3 (dB)	(dB)
R509	64.5	64.5	0.0
R511	59.4	59.4	0.0
R513	60.4	60.4	0.0
R515	70.1	70.1	0.0
R517	68.7	68.3	0.4
R519	65.1	65.1	0.0
R521	62.6	63.1	-0.5
R523	60.6	61.2	-0.6
R525	60.9	61.5	-0.6
R527	60.6	61.2	-0.6
R529	64.5	64.7	-0.2
R531	60.5	60.7	-0.2
R533	59.3	59.6	-0.3
R535	60.5	60.8	-0.3
R537	65	65.2	-0.2
R539	59.8	60.1	-0.3
R541	57.8	58.2	-0.4
R543	57.6	58	-0.4
R545	59.2	59.5	-0.3
R547	65.7	65.8	-0.1
R549	67.4	68	-0.6
R551	67	67.5	-0.5
R553	69	69.6	-0.6
R555	68	68.5	-0.5
R557	67.3	67.8	-0.5
R559	69.8	70.3	-0.5
R561	63.7	64.2	-0.5
R563	62.7	62.7	0.0
R564	62.4	62.4	0.0
R565	62.6	62.6	0.0
R570	57.7	57.8	-0.1
R572	52.8	53	-0.2
R574	52	52.1	-0.1
R576	55.8	55.9	-0.1
R578	66.3	66.3	0.0
R581	60.2	60.3	-0.1

11400 S. EIS Noise Receivers
Alternative 4
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 4 (dB)	Alt 4 (dB)	(dB)
R1	59.7	59.7	0.0
R3	72.7	72.8	-0.1
R5	61.9	62	-0.1
R7	59.7	59.8	-0.1
R8	56.3	56.3	0.0
R9	56.6	56.6	0.0
R10	57.7	57.7	0.0
R11	64.1	64	0.1
R13	57.7	57.4	0.0
R14	56.7	56.3	0.0
R15	57.2	57	0.0
R17	64.4	63.6	0.8
R19	69	69	0.0
R21	61.7	61.7	0.0
R23	59.9	59.9	0.0
R25	62.8	62.8	0.0
R27	66.7	66.7	0.0
R29	63	63	0.0
R31	63.8	63.8	0.0
R33	73.7	73.7	0.0
R35	68	68	0.0
R37	67.6	67.6	0.0
R39	67.7	67.7	0.0
R41	67.5	67.5	0.0
R43	70.2	70.2	0.0
R45	68.7	68.7	0.0
R47	70.7	70.7	0.0
R49	62.2	62.2	0.0
R51	66.7	66.7	0.0
R53	65	65	0.0
R55	61.3	61.3	0.0
R57	66.4	66.4	0.0
R59	63.6	63.6	0.0
R61	60.6	60.6	0.0
R63	63.5	63.5	0.0
R65	69.2	69.2	0.0
R67	59.7	59.7	0.0
R69	65.6	65.7	-0.1
R71	63.9	63.9	0.0
R73	65.1	65.1	0.0

11400 S. EIS Noise Receivers
Alternative 4
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 4 (dB)	Alt 4 (dB)	(dB)
R75	64.6	64.6	0.0
R77	65.6	65.6	0.0
R79	61.4	61.4	0.0
R81	65	65	0.0
R83	65.5	65.5	0.0
R85	66.4	66.4	0.0
R87	68.1	68.1	0.0
R89	63	63	0.0
R91	65	65	0.0
R93	57.4	57.4	0.0
R95	57.3	57.3	0.0
R97	58.7	58.7	0.0
R99	64.2	64.2	0.0
R101	65.9	65.9	0.0
R103	66.4	66.4	0.0
R105	68.6	68.6	0.0
R107	64.2	64.2	0.0
R109	68.1	68.1	0.0
R114	68.2	68.2	0.0
R116	68.1	68.1	0.0
R118	64	64	0.0
R120	65	65	0.0
R122	64.8	64.8	0.0
R124	58.6	58.6	0.0
R126	63.7	63.7	0.0
R128	63.3	63.3	0.0
R130	64.4	64.4	0.0
R132	65.2	65.2	0.0
R134	65.4	65.4	0.0
R136	64	64	0.0
R138	67.2	67.2	0.0
R140	69.7	69.7	0.0
R142	70.2	70.2	0.0
R144	68.6	68.6	0.0
R146	66.4	66.4	0.0
R148	70.6	70.6	0.0
R150	70	70	0.0
R152	65.3	65.3	0.0
R154	58.1	58.1	0.0
R156	66.4	66.4	0.0

11400 S. EIS Noise Receivers
Alternative 4
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 4 (dB)	Alt 4 (dB)	(dB)
R158	66.2	66.2	0.0
R160	60	60	0.0
R162	60.7	60.7	0.0
R164	65.9	65.9	0.0
R166	67	66.8	0.2
R168	58.4	57.1	1.3
R170	65.3	65.3	0.0
R172	73.5	73.8	-0.3
R174	68.2	68.2	0.0
R176	70.3	70.3	0.0
R178	67	67	0.0
R180	56.8	56.8	0.0
R182	57.6	57.6	0.0
R184	58.6	58.6	0.0
R186	63.4	63.4	0.0
R188	65.8	65.8	0.0
R193	70.1	70.1	0.0
R195	68.4	68.4	0.0
R197	68	68	0.0
R199	67.6	67.6	0.0
R201	62	62	0.0
R203	64	64	0.0
R205	63.5	63.5	0.0
R207	68.8	68.8	0.0
R209	67.4	67.4	0.0
R211	68.4	68.4	0.0
R213	66.5	66.5	0.0
R215	64.1	64.2	-0.1
R217	64.7	65	-0.3
R219	64.9	65.3	-0.4
R221	70.7	70.7	0.0
R223	67.1	67.1	0.0
R225	71	71.1	-0.1
R227	70	70	0.0
R229	65.9	65.9	0.0
R231	67.6	67.6	0.0
R233	67	67	0.0
R235	68.5	68.5	0.0
R237	68.8	68.8	0.0
R239	69	69	0.0

11400 S. EIS Noise Receivers
Alternative 4
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 4 (dB)	Alt 4 (dB)	(dB)
R241	73.1	73.1	0.0
R243	66.8	66.8	0.0
R245	64.2	64.2	0.0
R247	64.3	64.3	0.0
R249	64.4	64.4	0.0
R251	65.6	65.6	0.0
R253	67.5	67.5	0.0
R258	69.4	69.4	0.0
R260	64.3	64.3	0.0
R262	66.7	66.7	0.0
R264	67.4	67.4	0.0
R266	66.8	66.8	0.0
R268	67.3	67.3	0.0
R270	67.6	67.6	0.0
R272	70.3	70.3	0.0
R274	66.7	66.7	0.0
R276	68.4	68.4	0.0
R278	68.3	68.3	0.0
R280	66	66	0.0
R282	67.9	67.9	0.0
R284	62.7	62.8	-0.1
R286	67.8	67.8	0.0
R288	67.8	67.9	-0.1
R290	70.5	70.6	-0.1
R293	62	62	0.0
R295	67.4	67.4	0.0
R297	68.8	68.8	0.0
R299	68.8	69	-0.2
R301	70.8	70.9	-0.1
R303	68.4	68.5	-0.1
R305	67	67.1	-0.1
R309	66.4	66.7	-0.3
R311	64.4	64.6	-0.2
R313	71.3	71.5	-0.2
R315	71.6	71.8	-0.2
R317	65.2	65.4	-0.2
R319	72.3	72.4	-0.1
R321	71.2	71.4	-0.2
R323	70.1	70.4	-0.3
R325	65.6	65.6	0.0

11400 S. EIS Noise Receivers
Alternative 4
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 4 (dB)	Alt 4 (dB)	(dB)
R327	65.6	65.6	0.0
R331	66.1	66.1	0.0
R333	66.9	66.9	0.0
R335	67.6	67.6	0.0
R337	66.9	66.9	0.0
R339	66	66	0.0
R341	66.7	66.7	0.0
R343	68.9	68.9	0.0
R345	69.4	69.4	0.0
R347	65.9	65.9	0.0
R349	66.3	66.3	0.0
R351	61.3	61.3	0.0
R353	67.8	67.8	0.0
R355	72.5	72.5	0.0
R357	69.4	69.4	0.0
R359	68.4	68.4	0.0
R361	66.2	66.2	0.0
R363	67.5	67.5	0.0
R365	65.8	65.8	0.0
R367	66.8	66.8	0.0
R369	67.3	67.3	0.0
R371	67.2	67.2	0.0
R373	65.5	65.5	0.0
R375	65.8	65.8	0.0
R377	64.8	64.8	0.0
R379	64.5	64.5	0.0
R381	64.8	64.8	0.0
R383	67.5	67.5	0.0
R385	67.6	67.6	0.0
R387	60.8	60.8	0.0
R389	66.8	66.8	0.0
R391	65.6	65.6	0.0
R395	68.3	68.3	0.0
R397	63.3	63.3	0.0
R399	64.9	64.9	0.0
R401	69.5	70.4	-0.9
R403	65.1	65.3	-0.2
R405	69.4	70.3	-0.9
R407	67.1	67.2	-0.1
R409	68.8	68.9	-0.1

11400 S. EIS Noise Receivers
Alternative 4
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 4 (dB)	Alt 4 (dB)	(dB)
R411	67.3	67.3	0.0
R413	64.7	64.7	0.0
R415	65.6	65.6	0.0
R417	65.8	65.8	0.0
R419	66	66	0.0
R421	68.4	68.4	0.0
R423	69.1	69.1	0.0
R425	72.1	72.1	0.0
R427	69.4	69.4	0.0
R429	65.2	65.2	0.0
R431	66.3	66.3	0.0
R433	62.1	62.2	-0.1
R435	66.2	66.2	0.0
R437	69.1	69.1	0.0
R439	65.6	65.6	0.0
R441	63.9	63.9	0.0
R443	63.7	63.7	0.0
R445	61.1	61.1	0.0
R447	61.3	61.3	0.0
R449	65.6	65.6	0.0
R452	69.3	69.3	0.0
R454	64.2	64.2	0.0
R456	67.9	67.9	0.0
R458	70.9	70.9	0.0
R460	68.9	68.9	0.0
R462	68.6	68.6	0.0
R464	66.4	66.4	0.0
R466	65.4	65.4	0.0
R468	65.2	65.2	0.0
R470	69.9	69.9	0.0
R472	69.5	69.5	0.0
R474	68.9	68.9	0.0
R476	66.5	66.5	0.0
R478	66.8	66.8	0.0
R480	67.8	67.8	0.0
R482	66.3	66.3	0.0
R484	69.5	69.5	0.0
R486	67.3	67.3	0.0
R488	66.3	66.3	0.0
R490	65.2	65.2	0.0

11400 S. EIS Noise Receivers
Alternative 4
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 4 (dB)	Alt 4 (dB)	(dB)
R492	62.6	62.4	0.2
R493			0.0
R494			0.0
R495			0.0
R496	64.6	64.6	0.0
R497	63.5	63.5	0.0
R499	67.2	67.2	0.0
R500	61.3	61.6	-0.3
R501	67.5	67.5	0.0
R502	63.3	63.3	0.0
R503	65.5	65.3	0.2
R505	65.8	65.7	0.1
R506	65	65	0.0
R507	63.4	63.4	0.0
R509	63.5	63.5	0.0
R511	58.4	58.4	0.0
R513	58.7	58.7	0.0
R515	69.2	69.2	0.0
R517	70.8	70.7	0.1
R519	66.4	66.4	0.0
R521	62.2	62.2	0.0
R523	62	62.1	-0.1
R525	60.7	60.8	-0.1
R527	60.6	60.6	0.0
R529	64.7	64.9	-0.2
R531	60.1	60.3	-0.2
R533	58.8	59.2	-0.4
R535	60.7	61.1	-0.4
R537	66.1	66.4	-0.3
R539	60.2	60.7	-0.5
R541	58.1	58.6	-0.5
R543	57.7	58.2	-0.5
R545	58.9	59.3	-0.4
R547	66.8	66.8	0.0
R549	68.5	68.7	-0.2
R551	67.5	67.7	-0.2
R553	68.8	69.3	-0.5
R555	70.3	70.5	-0.2
R557	67.8	68.1	-0.3
R559	70.2	70.5	-0.3

11400 S. EIS Noise Receivers
Alternative 4
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	Alt 4 (dB)	Alt 4 (dB)	(dB)
R561	64.4	64.7	-0.3
R563	63	63	0.0
R564	62.8	62.8	0.0
R565	62.1	62.1	0.0
R570	61.4	61.4	0.0
R572	58.6	58.6	0.0
R574	57	57.1	-0.1
R576	59.9	60	-0.1
R578	69.1	69.1	0.0
R581	63.5	63.5	0.0

11400 S. EIS Noise Receivers
Alternative 7
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R1	56	56	0.0
R3	68.4	68.5	-0.1
R5	64.4	64.4	0.0
R7	61.3	61.4	-0.1
R8	54.3	54.4	-0.1
R9	55.1	55.2	-0.1
R10	55.9	55.8	0.1
R11	62.5	62.3	0.2
R13	57	56.7	0.0
R14	56.1	55.7	0.0
R15	56.5	56.3	0.0
R17	64.2	63.3	0.9
R19	68.2	68.1	0.1
R21	60.9	60.9	0.0
R23	59.3	59.3	0.0
R25	62.6	62.6	0.0
R27	66.8	66.8	0.0
R29	62.8	62.8	0.0
R31	63.6	63.6	0.0

11400 S. EIS Noise Receivers
Alternative 7
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R33	73.5	73.5	0.0
R35	67.8	67.8	0.0
R37	67.5	67.5	0.0
R39	67.6	67.6	0.0
R41	67.4	67.4	0.0
R43	70.2	70.2	0.0
R45	68.7	68.7	0.0
R47	70.8	70.8	0.0
R49	62.3	62.3	0.0
R51	66.9	66.9	0.0
R53	65.2	65.3	-0.1
R55	61.6	61.6	0.0
R57	66.7	66.7	0.0
R59	63.8	63.8	0.0
R61	60.9	60.9	0.0
R63	64	64	0.0
R65	69.3	69.3	0.0
R67	59.8	59.8	0.0
R69	65.8	65.8	0.0
R71	64	64	0.0
R73	65.2	65.2	0.0
R75	64.8	64.8	0.0
R77	65.7	65.7	0.0
R79	61.5	61.5	0.0
R81	65.2	65.2	0.0
R83	65.7	65.7	0.0
R85	66.8	66.8	0.0
R87	68.4	68.4	0.0
R89	63.3	63.3	0.0
R91	65.3	65.3	0.0
R93	57.6	57.6	0.0
R95	57.6	57.6	0.0
R97	58.9	58.9	0.0
R99	64.5	64.5	0.0
R101	66.1	66.1	0.0
R103	66.6	66.6	0.0
R105	68.8	68.8	0.0
R107	64.4	64.4	0.0
R109	68.3	68.3	0.0
R114	68.9	68.9	0.0

11400 S. EIS Noise Receivers
Alternative 7
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R116	68.7	68.7	0.0
R118	64.5	64.5	0.0
R120	65.5	65.5	0.0
R122	65.3	65.3	0.0
R124	59.1	59.1	0.0
R126	64.2	64.2	0.0
R128	63.8	63.8	0.0
R130	64.9	64.9	0.0
R132	65.6	65.6	0.0
R134	65.8	65.8	0.0
R136	64.4	64.4	0.0
R138	67.4	67.4	0.0
R140	69.8	69.8	0.0
R142	70.4	70.4	0.0
R144	68.8	68.8	0.0
R146	66.4	66.4	0.0
R148	70.5	70.5	0.0
R150	69.8	69.8	0.0
R152	65.2	65.2	0.0
R154	58.1	58.1	0.0
R156	67.1	67.1	0.0
R158	66.8	66.8	0.0
R160	60.6	60.6	0.0
R162	60.9	60.8	0.1
R164	65.8	65.7	0.1
R166	66.7	66.5	0.2
R168	58.1	56.7	1.4
R170	64.9	64.9	0.0
R172	73.6	73.7	-0.1
R174	68.2	68.2	0.0
R176	70.3	70.3	0.0
R178	67	67	0.0
R180	56.8	56.8	0.0
R182	57.6	57.6	0.0
R184	58.6	58.6	0.0
R186	63.4	63.4	0.0
R188	65.8	65.8	0.0
R193	70.1	70.1	0.0
R195	68.4	68.4	0.0
R197	68	68	0.0

11400 S. EIS Noise Receivers
Alternative 7
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R199	67.6	67.6	0.0
R201	62	62	0.0
R203	64	64	0.0
R205	63.5	63.5	0.0
R207	68.8	68.8	0.0
R209	67.5	67.5	0.0
R211	68.5	68.5	0.0
R213	66.6	66.6	0.0
R215	64.1	64.1	0.0
R217	65.3	65.5	-0.2
R219	65.1	65.5	-0.4
R221	70.5	70.5	0.0
R223	66.9	66.9	0.0
R225	71.1	71.1	0.0
R227	70	70	0.0
R229	65.8	65.9	-0.1
R231	67.6	67.6	0.0
R233	67	67	0.0
R235	68.5	68.5	0.0
R237	68.8	68.8	0.0
R239	69	69	0.0
R241	73.1	73.1	0.0
R243	66.8	66.8	0.0
R245	64.2	64.2	0.0
R247	64.3	64.3	0.0
R249	64.4	64.4	0.0
R251	65.6	65.6	0.0
R253	67.5	67.5	0.0
R258	69.4	69.4	0.0
R260	59.2	59.2	0.0
R262	66.3	66.3	0.0
R264	67.1	67.1	0.0
R266	66	66	0.0
R268	66.6	66.6	0.0
R270	66.8	66.8	0.0
R272	69.3	69.3	0.0
R274	65.8	65.8	0.0
R276	68	68	0.0
R278	67.9	67.9	0.0
R280	65.6	65.6	0.0

11400 S. EIS Noise Receivers
Alternative 7
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R282	67.5	67.5	0.0
R284	62.3	62.3	0.0
R286	67.4	67.4	0.0
R288	67.4	67.4	0.0
R290	70.6	70.6	0.0
R293	61	61	0.0
R295	66.9	66.9	0.0
R297	68.4	68.5	-0.1
R299	68.8	69.1	-0.3
R301	70.7	70.8	-0.1
R303	68.4	68.5	-0.1
R305	66.8	66.9	-0.1
R309	66.4	66.7	-0.3
R311	64.4	64.6	-0.2
R313	71.3	71.4	-0.1
R315	71.6	71.8	-0.2
R317	65.1	65.3	-0.2
R319	72.2	72.3	-0.1
R321	71.2	71.4	-0.2
R323	70.1	70.5	-0.4
R325	65	65	0.0
R327	65	65	0.0
R331	65.5	65.5	0.0
R333	66.3	66.3	0.0
R335	67	67	0.0
R337	66.4	66.4	0.0
R339	65.5	65.5	0.0
R341	66.2	66.2	0.0
R343	68.4	68.4	0.0
R345	69	69	0.0
R347	65.5	65.5	0.0
R349	65.9	65.9	0.0
R351	60.8	60.8	0.0
R353	67.3	67.3	0.0
R355	72.3	72.3	0.0
R357	69.2	69.2	0.0
R359	68.1	68.1	0.0
R361	66.1	66.1	0.0
R363	67.5	67.5	0.0
R365	65.8	65.8	0.0

11400 S. EIS Noise Receivers
Alternative 7
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R367	66.9	66.9	0.0
R369	67.3	67.3	0.0
R371	67.3	67.3	0.0
R373	65.6	65.6	0.0
R375	65.9	65.9	0.0
R377	65	65	0.0
R379	64.7	64.7	0.0
R381	64.9	64.9	0.0
R383	67.6	67.6	0.0
R385	67.8	67.8	0.0
R387	60.7	60.7	0.0
R389	66.8	66.8	0.0
R391	65.7	65.7	0.0
R395	68.2	68.2	0.0
R397	63.6	63.6	0.0
R399	65.2	65.2	0.0
R401	69.3	70	-0.7
R403	65	65.2	-0.2
R405	69.3	69.9	-0.6
R407	67.2	67.3	-0.1
R409	69.1	69.1	0.0
R411	67.6	67.6	0.0
R413	64.7	64.8	-0.1
R415	65.8	65.8	0.0
R417	65.8	65.8	0.0
R419	65.9	65.9	0.0
R421	68.4	68.4	0.0
R423	69	69	0.0
R425	71.8	71.8	0.0
R427	69.5	69.6	-0.1
R429	65.3	65.3	0.0
R431	66.5	66.5	0.0
R433	62.3	62.3	0.0
R435	66.4	66.4	0.0
R437	69.3	69.3	0.0
R439	65.8	65.9	-0.1
R441	64.1	64.1	0.0
R443	63.9	63.9	0.0
R445	61.4	61.4	0.0
R447	61.5	61.5	0.0

11400 S. EIS Noise Receivers
Alternative 7
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R449	65.7	65.7	0.0
R452	69.5	69.5	0.0
R454	64.2	64.2	0.0
R456	68.1	68.1	0.0
R458	70.4	70.4	0.0
R460	68.3	68.3	0.0
R462	68.2	68.2	0.0
R464	65.9	65.9	0.0
R466	64.9	64.9	0.0
R468	64.7	64.7	0.0
R470	69.6	69.6	0.0
R472	69.2	69.2	0.0
R474	68.4	68.4	0.0
R476	66	66	0.0
R478	66.3	66.3	0.0
R480	67.3	67.3	0.0
R482	65.8	65.8	0.0
R484	68.9	68.9	0.0
R486	66.7	66.7	0.0
R488	65.8	65.8	0.0
R490	64.6	64.6	0.0
R492	61.9	61.7	0.2
R493			0.0
R494			0.0
R495			0.0
R496	60.2	60.1	0.1
R497	60.4	60.4	0.0
R499	67.7	67.7	0.0
R500	62.1	62.5	-0.4
R501	67.4	67.4	0.0
R502	63.4	63.4	0.0
R503	64.6	64.4	0.2
R505	65.6	65.4	0.2
R506	65.6	65.6	0.0
R507	63.3	63.3	0.0
R509	63.5	63.5	0.0
R511	57.9	57.9	0.0
R513	58.9	58.9	0.0
R515	69.2	69.2	0.0
R517	71.5	71.6	-0.1

11400 S. EIS Noise Receivers
Alternative 7
LOS C vs. LOS D

	LOS C	LOS D	Difference
Receiver Name	No Build (dB)	No Build (dB)	(dB)
R519	66.1	66.1	0.0
R521	61.4	62	-0.6
R523	60.7	61.3	-0.6
R525	60.5	61.2	-0.7
R527	60.8	61.4	-0.6
R529	62	62.3	-0.3
R531	58	58.4	-0.4
R533	57.5	57.9	-0.4
R535	58.6	59	-0.4
R537	62.6	62.9	-0.3
R539	58.9	59.4	-0.5
R541	57.1	57.6	-0.5
R543	57	57.4	-0.4
R545	57.8	58.2	-0.4
R547	63	63.2	-0.2
R549	68.6	69	-0.4
R551	68.9	69.3	-0.4
R553	69.5	69.9	-0.4
R555	66.9	67	-0.1
R557	68.5	68.8	-0.3
R559	70.8	71.2	-0.4
R561	64.8	65.1	-0.3
R563	62.9	62.9	0.0
R564	62.7	62.7	0.0
R565	62	62.1	-0.1
R570	61.2	61.2	0.0
R572	57.2	57.3	-0.1
R574	55.7	55.8	-0.1
R576	60	60	0.0
R578	69.2	69.2	0.0
R581	63.6	63.6	0.0